3(2)
PERIODICAL

SPC
SOUTH PACIFIC COMMISSION

LIBRARY
FISH & WILDLIFE SERVICE
PACIFIC OCEANIC FISHERY
INVESTIGATIONS
JUL 28 1953

quarterly BULLETIN

VOL. 3. NO. 2 APRIL, 1953

CONTENTS

Second South Pacific Conference ..... *C. E. Sayers*
Co-operative Societies Conference Held in Suva
The Work of a Literature Bureau ..... *Bruce Roberts*
Animal Production in the South Pacific ..... *Dr. R. B. Kelley*
Cattle Breeds for Tropical Conditions
Santa Gertrudis Cattle in Queensland
Rhinoceros Beetle Outbreak in Fiji
The Processing and Storage of Cereals in Tropical Climates ..... *Dr. E. Hipsley*
Marketing Developments in the Trust Territory of the Pacific Islands ..... *Neil T. Houston*
Crop Promotion in Papua and New Guinea
Commission Work Programme : Social Development Section Quarterly Reading List No. 7 : Film and Filmstrip Appraisals : List of Commission Publications

PUBLISHED BY THE SOUTH PACIFIC COMMISSION, NOUMEA, NEW CALEDONIA

THE SOUTH PACIFIC COMMISSION

The South Pacific Commission is an advisory and consultative body set up by the six Governments responsible for the administration of Island Territories in the South Pacific region. Its purpose is to recommend to the member Governments means for promoting the well-being of the people of these territories. It is concerned with social, economic and health matters. Its headquarters are at Noumea, New Caledonia.

The Commission was established by an Agreement between the Governments of Australia, France, the Netherlands, New Zealand, the United Kingdom and the United States of America, signed at Canberra on the 6th February, 1947, and finally ratified on the 29th July, 1948. Until the 7th November, 1951, the area of the Commission's activities comprised territories lying generally south of the equator from and including Netherlands New Guinea in the west to the French Establishments in Oceania and Pitcairn in the east. On 7th November, 1951, an additional Agreement was signed at Commission headquarters in Noumea on behalf of the six participating Governments, extending the scope of the Commission to include Guam and the Trust Territory of the Pacific Islands under United States administration.

The Commission consists of twelve Commissioners, two from each Government, and meets twice a year. The first Session was held in May, 1948. There are two auxiliary bodies, the Research Council and the South Pacific Conference.

The Research Council, which assembles once a year, held its first meeting in May, 1949. Members are appointed by the Commission, and are selected for their special knowledge of the questions with which the Commission is concerned, and the problems of the territories in these fields. The chief function of the Research Council is to advise the Commission what investigations are necessary. Arrangements to carry out those that are approved are the responsibility of the Secretary-General and other principal officers.

The South Pacific Conference, which meets at intervals not exceeding three years, consists of delegates from the local inhabitants of the territories, who may be accompanied by advisers. The first Conference was held in Suva in April, 1950, and was attended by delegates from fifteen territories and from the Kingdom of Tonga. The second Conference was held at Commission headquarters in April, 1953.

The Commission's staff includes six principal officers, as follows: Secretary-General, Sir Brian Freeston, K.C.M.G., O.B.E. (United Kingdom); Deputy Chairman of the Research Council, Dr. E. M. Ojala (New Zealand); Deputy Secretary-General, Mr. John Ryan (Australia); Executive Officer for Health, Dr. E. Massal (France); Executive Officer for Economic Development, Dr. A. H. J. Kroon (Netherlands); Executive Officer for Social Development, Mr. H. E. Maude, O.B.E. (United Kingdom). The Deputy Chairman and the three Executive Officers are ex officio members of the Research Council. The principal officers are supported by a small technical and administrative staff.

Further particulars of the Commission's activities may be obtained from the Secretary-General, Noumea, New Caledonia.

SPC QUARTERLY BULLETIN

VOL. 3. NO. 2 APRIL, 1953

CONTENTS

Second South Pacific Conference 2
Co-operative Societies Conference Held in Suva 5
The Work of a Literature Bureau
By Bruce Roberts, Organizer for Island Literature 6
Animal Production in the South Pacific
By R. B. Kelley, Officer-in-Charge, F. D. McMaster Field Station, C.S.I.R.O. 9
Cattle Breeds for Tropical Conditions 10
Santa Gertrudis Cattle in Queensland 12
Rhinoceros Beetle Outbreak in Fiji 14
The Processing and Storage of Cereals in Tropical Climates
By Dr. E. Hipsley, Institute of Anatomy, Canberra 15
Marketing Developments in the Trust Territory of the Pacific Islands
By Neil T. Houston, Economist, Island Trading Company of Micronesia 17
Crop Promotion in Papua and New Guinea
By the Department of Territories, Commonwealth of Australia 20
Commission Work Programme —
Economic Development 23
Health 25
Social Development 27
Social Development Section: Quarterly Reading List No. 7 31
Education in American Samoa
By the Department of Education 36
Principal Commission Publications 36

THE SPC QUARTERLY BULLETIN, first published in January, 1951, was instituted primarily to provide, for general circulation, a quarterly survey of the Commission's activities in its three main fields of operation; economic development, health and social development. Articles are also featured on a wide variety of subjects in these and related fields, usually contributed by specialists working in the territories within the Commission area.

THE BULLETIN is given selective world distribution to people and institutions in widely differing fields sharing a common interest in the purposes and work of the Commission. It is published in two editions, English and French.

ALL ENQUIRIES relating to the SPC QUARTERLY BULLETIN, together with subscriptions and orders for single copies, should be directed to the Secretary-General, South Pacific Commission, Noumea, New Caledonia.

SUBSCRIPTION RATES are as follow: One year, subscription 8/- sterling, or $1.15, by surface mail; three years, subscription 20/- sterling, or $2.80, by surface mail. Rates for postage by airmail will be supplied on application.

UNLESS OTHERWISE STATED, all material appearing in the SPC QUARTERLY BULLETIN may be reproduced without prior reference to the Secretary-General, provided that acknowledgement is made to both source and author.

THE COMMISSION does not accept responsibility for statements made in contributed articles.

Delegates, observers and secretariat staff attending the Second South Pacific Conference, photographed in front of Commission headquarters at Anse Vata, two miles from Noumea. The Chairman, M. Lassalle-Sere, is seated centre front row.

Second South Pacific Conference

*The Second South Pacific Conference was held at Commission headquarters from 17th to 27th April. A summary of proceedings is given in the article below.**

By C. E. SAYERS

PROGRESS was the theme of the Second South Pacific Conference which concluded a twelve-day meeting at the headquarters of the South Pacific Commission on 27th April.

Eighteen territories and the Kingdom of Tonga were represented. Delegates covered a wide field of activity and endeavour in discussing the agenda items, and the work of the Commission since the first Conference was held at Nasinu, Fiji, three years ago.

Amongst observers at the Conference were representatives of the International Labour Organization, Pacific Science

* Publication of the April Quarterly Bulletin, which normally covers the quarter ending 31st March, was delayed in order that an account of the proceedings of this Conference could be included.

Board of the National Research Council of U.S.A., World Health Organization, French Institute of Oceania, and missionary organizations of Australia, New Zealand, the Netherlands and the South Pacific.

The flags of the six nations forming the Commission — Australia, France, the Netherlands, New Zealand, the United Kingdom and the United States of America—flew from its headquarters at Anse Vata where the Conference was held.

Delegates were welcomed by the Governor of New Caledonia, M. R. Angammarre.

The Chairman, M. R. Lassalle-Séré, Senior Commissioner for France, officially opened the Conference. He told delegates that he felt the greatest benefits they could derive would come through the contacts they made, conversations with each other and the knowledge they would gain in this way, at least, of the outside world. Let no one say that would be a slender result.

Commission's Work Reviewed

The Secretary-General, Sir Brian Freeston, reviewed the work that had been done since the first Conference was held in Suva in 1950. Definite, practical action, he said, had been taken on at least thirty of the forty-three recommendations of that Conference. Filariasis control measures, vocational training and development of food and export crops were examples. The Commission had done its utmost within limited resources to bring nearer to realization the hopes and the aspirations of the Pacific people by correspondence, specialist conference, and personal contact. Specialist conferences were planned for next year on rice production and technical aspects of the co-operative movement.

Progress was the subject of an address by Dr. E. M. Ojala, Deputy Chairman of the Research Council, an auxiliary of the Commission.

Dr. Ojala said he did not think there were many people in the Pacific who were not interested in progress. That was the main impression he had gained in moving about the Pacific in the past year. Everywhere people's minds were open to new ideas and new ways of doing things. That interest in progress had not always been present in the Pacific.

The course of progress was well under way in some Pacific territories, and just beginning in others. The urge was there, Dr. Ojala said. He had been impressed during his visits with the vital role that administrations were playing in helping the people to express their aspirations in practical achievements — roads, co-operative societies, village councils, new tools and machinery, new crops, hospitals and schools.

A number of factors held back the pace of progress in the islands. The most serious was probably an inadequate level of education, especially technical education. This lack limited the amount of capital which could be invested each year, and that very largely set the pace of development. Availability of resources was a limiting factor in some parts of the Pacific, particularly on the atolls, where about 130,000 people lived. Another brake on progress was the reluctance in some places to modify traditional customs, particularly in relation to land tenure.

Economic progress underlay health and social progress. It paid the cost of education and social services, provided avenues of creative expression for healthy, educated men and women and brought the basic answer to most diseases by raising housing and hygiene standards.

People's Vital Role

The people, missions, traders, planters and the administrations had the vital role to play in Pacific progress. The Commission had the selective but important role of regional research and action in co-operation with governments. It was always looking for new ways of working with the people, and was most anxious to have their recommendations.

Dr. Ojala concluded, "I believe that the Commission is already proving a demonstration to the world of what six nations can accomplish when they decide to work together for the development of the people, and the resources under their care. This demonstration will grow in strength as the years pass."

Dr. A. H. Kroon, Executive Officer for Economic Development, said prospects for economic advance from internal resources were not very bright for a great part of the Pacific for the next few years. It was urgent to assess the value of existing resources in agriculture, forestry, fisheries, and livestock. The people would have to accept new things in the economic field. There must also be a social background capable of absorbing new things.

Mr. H. E. Maude, Executive Officer for Social Development, said the old days of self-sufficient communities were gone from the Pacific as elsewhere. But there was still some leeway to catch up before the South Pacific people could take their full part in the modern world.

Illiteracy was already beaten in thirteen of the eighteen South Pacific territories represented at the Conference. He believed that in the remaining five—Papua, New Guinea, Dutch New Guinea, the Solomons and the New Hebrides—illiteracy would be beaten within our lifetime.

The section's most important single development was the South Pacific Literature Bureau. Its aim was to bring knowledge of all kinds to the islands with books, magazines, pictures, films, filmstrips and radio broadcasting, and through every possible agency.

Dr. Emile Massal, Executive Officer for Health, said that diet and mass education seemed to him logically necessary to complete the picture begun in Suva three years ago. Unbalanced and inadequate diet and defective hygiene were still factors causing dissatisfaction and wretchedness, reducing the human life span and productive activity, and spreading disease. Points that appeared essential for further improving health were the inter-relation between social and economic conditions, and the consequent necessity for solid, continuous and close co-operation among the people, leaders and technicians.

Population Pressures

Population trends, and pressures, and problems of food production and conservation of resources, were keenly debated by the Conference on the basis of a paper prepared by Prince Tungi, Premier of Tonga, and presented by Prince Tu'ipelehake, Governor of the Central Group of the Tonga Islands.

This paper suggested that a method of standardizing census-taking should be evolved, and its results worked out by an expert demographer. This would enable administrations to compare their own population trends with

resources, and take any action considered necessary.

Prince Tu'ipelehake told the Conference that the Tonga Government had made efforts to educate its people in birth control, but with little success. One possible solution of Tonga's problem was to remove people from overpopulated to less crowded islands in the group. Another possibility was the study of intensive cultivation to see if it was possible for people to make a living on a smaller area than the $8\frac{1}{4}$ acres every Tongan boy was granted on reaching sixteen years.

The Nauru delegation asked the Conference to support a request to the Australian Government that a new home be found for the people of the Group somewhere in the South Pacific, where resources would be adequate for an increasing population.

That delegation opposed birth control, but it was put forward by the Gilbert and Ellice Islands delegation "as the only rational means of limiting population after it reached the optimum level relative to resources."

American Samoa also opposed birth control, not only on moral grounds, but because they had pride in their people and wished to see them increase. Migration of young men was also rejected, because that would take away the best educated people. The solution offered was the possibility of introducing new techniques and ideas for the fuller development of available resources; means must be found of using increasing manpower to get more production.

A delegate from the Trust Territory of the Pacific Islands warned against the standard of living being taken too far out of balance with resources. The islanders, he said, should be educated to understand that they were farmers and fishermen, and that they could not compete industrially with countries which had complex techniques and skills.

Offer from New Guinea

The New Guinea delegation told of an underpopulated, under-developed country, with a little more than a million people settled in 93,000 square miles. It would welcome people from Nauru as settlers.

A debate on the development and conservation of resources, showed need for the greater use of existing resources and the development of new ones. This need was stressed because of growing populations in most territories.

The successful development of primary industries by the use of modern methods, was demonstrated in the story of the expansion of citrus and tomato growing in the Cook Islands. The New Zealand Government assisted the islanders to develop these industries, and the export surplus is sold on the New Zealand market. This now amounts to 50,000 cases of citrus and 40,000 boxes of tomatoes a year.

A Cook Islands delegate told the Conference that pineapple production was growing, and soon a canning factory would be needed. The aim was to increase citrus export to 100,000 cases.

Marketing problems were fully and intelligently discussed by the Conference. Needs stressed included the study of means for assuring islanders price stability, encouragement of greater production of export crops, and greater assurance of markets, and the possibility of area-wide action as a means of improving the position of basic export industries.

The Conference adopted a series of resolutions on the subject. Amongst them was a recommendation that the Commission establish a marketing information service. The object of this service would be to collect and distribute information on the kind, grade and quantity of island produce which other Pacific territories can absorb, ruling prices in different territories, existing import prohibitions in the different territories and the reasons for them, and inter-territorial transportation.

Third South Pacific Conference

The Second South Pacific Conference recommended that the next Conference be held in two years' time. When the question was put before the Conference on 24th April, twenty-two delegates voted for two years and eleven for three years.

Lae (Australian New Guinea), American Samoa and Western Samoa were suggested as the site for the Conference. The South Pacific Commission will decide both date and site.

Subjects suggested for the agenda of the next Conference include the establishment of a South Pacific University, a survey of new indigenous industries, economic education, the modernization of industry, the encouragement of native arts, and labour and working conditions in the South Pacific.

Co-operative Societies

The greater encouragement of co-operative societies was urged by most of the delegations. A resolution expressed the consciousness of the Conference of their great value and importance, in the production, transport and marketing of copra and other commodities, and in securing fair prices to the producer.

The Commission was requested to intensify its efforts to encourage and develop the co-operative movement, and to place specialist advisers at the disposal of territorial administrations requesting such assistance.

Wide price fluctuations could be best countered by governmental price guarantees, it was felt.

The Commission's attention was drawn to opportunities for concentrating processing industries in centres from which products would have tariff-free access to principal markets.

Changes in food habits of the islanders and their effects on health were discussed on the basis of a paper presented by the Fiji delegation. The paper suggested, amongst other things, ways in which native diets could be improved. Dietary improvement depended on long-term economic, medical, agricultural and educational programmes.

Increasing populations, the paper said, could not be supported at a reasonable level of nutrition unless there was a simultaneous increase in the quantity and quality of food supplies. Where European influence was widespread the islanders often had a poorer type of diet.

Warnings of the danger of trying to change native food habits too quickly were sounded by several delegations.

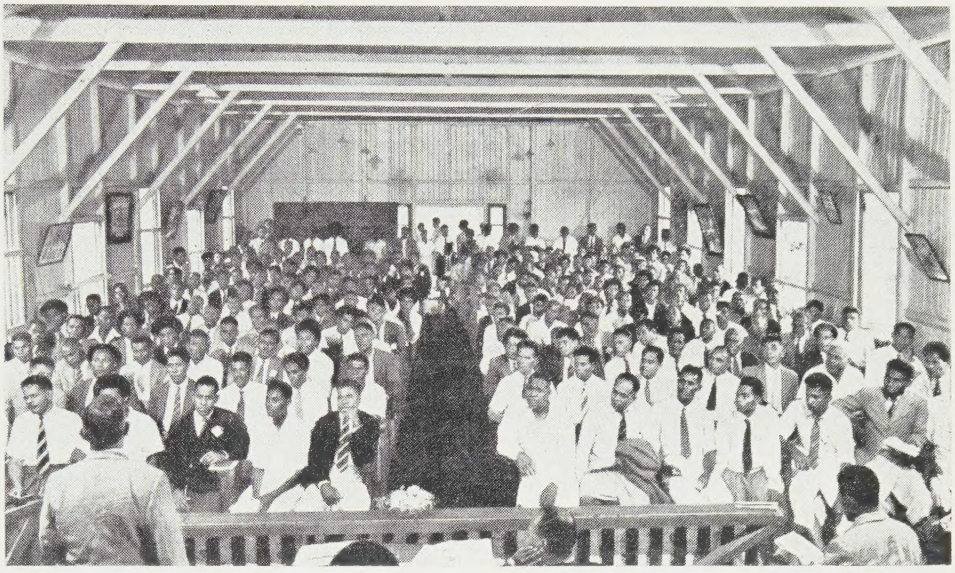
A New Caledonia delegate said his tribes should be introduced to European food very gradually. It would not be a good thing to force them, as they were conservative. He suggested that nutritional standards be laid down in order to establish a rational diet for the tribes.

Miss Tani Sisa (Papua), one of the three women delegates to the Conference, said the diet of island people

(Continued on page 35)

Co-operative Societies Conference Held In Suva

Permanent Association To Be Formed



Mr. B. E. V. Parham, O.B.E., Deputy Director of the Department of Agriculture, Fiji, addressing the conference.

PROBLEMS relating to the operation of co-operatives were discussed at a conference of co-operative societies held in Suva in January under Fiji Government auspices. About 240 delegates from 97 registered societies and unregistered groups in the Southern District attended the sessions.

There are now more than thirty registered societies and over one hundred unregistered groups in Fiji. Most of them are Fijian societies, but a number of Indian farmers in the Western District have formed themselves into societies, mostly for the purpose of buying tractors for the cultivation of their land.

The movement was introduced into the Colony five years ago. Legislation provides for registration of societies.

The official ordinance provides, amongst other things, that co-operative members may get exemption from communal social services to work their land and harvest their crops. This has led, in some instances, to differences between local officials and members of co-operatives.

Suggestions for clarifying the communal obligations of members were made to the conference. Delegates were told that the relationship between co-operative societies and the Fijian administration should be really an extension of the principle of co-operation. As they helped one another and worked together to promote their economic interest, they should also work with provincial officials, and with all Fijians in their area, to further the general social and economic welfare of the whole community. Co-operation was primarily an economic movement — not a social or political system entirely separate from the rest of the community.

It was also suggested to the conference that retail storekeeping and the marketing of produce, particularly perishables, were difficult activities for co-operatives.

Increased Production Needed

The Director of Agriculture, Mr. C. Harvey, who is the Registrar of Co-operative Societies, said: "The most important need of the Fijian people at the present time is to produce more; to make greater use of their land. I should like to see co-operative societies giving more attention to this form of co-operative activity — the acquisition of cultivating equipment, bullocks and plough or a tractor, the improvement of land by drainage, building copra kilns, planting more cane, rice, coconuts or bananas."

Mr. Harvey added: "Do not forget this—if you want to make progress in economic affairs, co-operative societies can help you, but they are not a substitute for hard work."

Farmers, seamen, industrial workers, commercial men, craftsmen, teachers and retired officials were amongst those who attended the conference, the first ever held in the Colony.

The establishment of a permanent Co-operatives Association was approved by the Conference. The main objects of this Association will be to assist member co-operatives to overcome communal difficulties, to assist in every way possible the spread of co-operative education, to encourage its members to work in close co-operation with the Fijian administration and to give practical financial assistance to native education in Fiji and Rotuma, or to any other worthwhile object.

Eleventh Session of Commission to Open on 28th April

The Eleventh Session of the South Pacific Commission will open at Commission headquarters on Tuesday, 28th April. Commissioners representing the six member Governments will be present. The majority will attend, as observers, the Second South Pacific Conference being held at Commission headquarters from 17th to 27th April.

The main business of the Eleventh Session will be consideration of resolutions of the Conference.

Sir Henry Milne Scott, Q.C., of Suva, will preside, in the unavoidable absence of the Senior Commissioner

(Continued on page 15)

The Work Of A Literature Bureau

By Bruce Roberts

Organizer for Island Literature,
South Pacific Commission

An interior view of the headquarters bookshop of the United Society for Christian Literature at Lusaka, Northern Rhodesia. In co-operation with the Publications Bureau, this bookshop supplies stocks of books to hundreds of up-country selling outlets.

In 1950 the Commission approved the establishment of the South Pacific Literature Bureau, to stimulate production of simple literature for Pacific island peoples. In January, 1952, Mr. Bruce Roberts was appointed Organizer for Island Literature to the Commission, and placed in charge of the Bureau. In this article Mr. Roberts, who has had wide experience in the production of English and vernacular literature in Central Africa, describes the long-term aims of literature bureaux, and their main avenues of operation.

THE South Pacific Literature Bureau is too near its infancy for it to be practicable to forecast which of many possible lines of development may commend themselves to the various governments in the area. What may prove successful in one region may not be very suitable in another, for not only do the various island groups all have their own special problems and cover a wide range of stages in development, but the different resources and policies of the administrations concerned also call for flexibility in approach.

It may be of interest, however, to outline briefly some of the activities of the older literature bureaux which have been established elsewhere, for people sometimes think of these bureaux simply as places where people are engaged in writing pamphlets and small books of an instructional and improving nature. This idea is often accompanied by the impression that either through the possession of ample funds, or its own printing press, a literature bureau can ignore the hard financial realities of printing and publishing such material. In fact, the problems encountered by the older bureaux, and the techniques devised for their solution, were conditioned more by their long-term aims than by the immediate needs for text books, instructional pamphlets, and so on.

The long-term aim of these bureaux is the establishment, on normal and healthy commercial lines, of the book trade in the areas concerned. In these areas throughout the world (including the Pacific) there are many thousands of schools; each new generation sees a great increase of literate people who, having been taught to read, not only need literature but are voicing their needs with growing insistence. These needs have two aspects: there is a need for improving access to sound literature already existing, and there is a need for the production of much new literature designed in relation to the particular problems and environment of the people.

There are two ways in which we can attempt to meet these needs. We can either continue and extend early practices whereby production is financed through a number of direct or indirect subsidies, or we can aim at making literature as nearly self-supporting as possible by trying to build up a normal book trade.

The pattern of the former method will be familiar to many readers, and all honour is due to those who produced so much of the early work through it. Material was written by enterprising and devoted people, usually as a spare-time occupation connected with their work. They seldom sought or received any payment for

A mobile bookshop maintained in Nyasaland by the Northern Rhodesia and Nyasaland Joint Publications Bureau.

their writing, either in the form of fees or royalties; this in itself constituted an indirect subsidy. The material was then usually printed on mission or government presses, where costing methods bore little relation to those necessary in commercial publication. Much of the cost of this printing, whether in direct charges or overheads, was not taken into account, thus creating another hidden subsidy. And finally, the methods of distribution were not very systematically organized, so that not only was access by the indigenous peoples to literature rather uncertain, but the economic aspects of this distribution were not given much consideration.

This description of early methods is not a criticism, for they served a valuable purpose and laid the foundations on which we build today. But they were methods which are difficult to expand widely enough to meet present needs, for two reasons. Firstly, they were dependent to a great extent on voluntary service. Today, however, there are simply not enough people with the spare time and the necessary technical knowledge to meet the complicated and voluminous needs of the present. Secondly, as has already been explained, the economics of the system depended very largely on direct subsidy from mission or government funds, or on indirect subsidy through discounting real costs. This is possible when the literature needs are small, but not when expanded to their present extent.

There was another important reason why governments, through literature bureaux, aimed at establishing the book trade on commercial lines in the "dependent areas." Whatever the particular doctrine held regarding the eventual relationship between the dependent areas and the mother country, the idea that they should remain dependent in the economic sense is seldom entertained, and the book trade is but one of many activities of economic and cultural development which should aim at eventually standing on its own feet rather than depending on subsidies.

It was occasionally found that, although people accepted the logic of these arguments, they were a little worried by the commercial aspect of bookselling among unsophisticated people. They felt that, although there is much attractive and useful material about, there is also a certain amount that is pernicious and mischievous. This is unfortunately true. But it became increasingly obvious that where people were beginning to feel the inevitable desire to make use of their newly-acquired reading skills, it was unwise to remain indifferent. Unless efforts were made to ensure that reading needs were met through the provision of attractive literature in sufficiently large quantity and variety, there was no opposition to the type of material which one would prefer not to see but which seems to gain circulation only too readily.

Efforts to establish the book trade on commercial lines have not meant that the enthusiasm and knowledge of those who produced so much of the earlier work is no longer valued and wanted. On the contrary, the bureaux have sought to assist and develop such work in many ways; by providing a focus for the activities of the many trades, professions, and vocations which enter into the writing, publication, and distribution of books, and by devising various technical and financial procedures, they have created means through which this earlier work can become even more fruitful.

If we reflect for a moment on the book trade as it is known in the older countries we shall recognize that it involves more than just the writing and printing of instructional pamphlets. Above all, it contains one outstanding feature which radically affects the approach to the whole question of providing literature. If literature is to be developed on a financially realistic basis, it must be sold rather than given away free; and although in certain circumstances subsidies need not be ruled out entirely, it must eventually be sold at prices which reflect the true costs of production and distribution.

If the filling of immediate needs without financial consideration were our only problem, there would be no great difficulty. All that would be necessary would be to select a subject, to delegate some knowledgeable person to write the material, to find the money to have it printed, and to send parcels of the books to various places to be handed out—mostly free, for not many people are willing to pay out hard-earned money for the purchase of instructions.

But if we aim to produce material which will not only meet the needs of the people, but which will also arouse their co-operation and interest to the extent that they will be willing to buy it, the problem must be approached from quite a different standpoint. In writing about any particular topic, it will be necessary to temper our judgment of the facts we wish to impart with an appreciation of the problem as the people themselves see it. We shall need to learn more about people's interests as well

as needs, both as regards subjects to be dealt with and the way in which they are treated. And we shall need to find authors who can write or adapt the material in a way which will elicit the support of the public.

There is a vast amount of good, well-illustrated, simple material which has already been published, but which the people with whom we are concerned have little opportunity of seeing or buying. We need to find out which of this material arouses their interest, and to do this it is necessary to organize a proper distribution system for books. It is no use writing new material or importing existing material if there are no means through which it can be got into the hands of the people.

If it is intended that books should be sold at an economic price, it is necessary to discover where people's interests lie. There are many ways of doing this. One of the most popular is by arranging competitions in which prizes are offered for the best manuscripts on given subjects. This method is useful in that it does provide manuscripts in the early stages, and it gives one a good idea of who among the local population has a talent for authorship, but it also has limitations. People who have not had much experience of literature do not appreciate the tremendous variety of subject and treatment that is possible, and so one is sometimes forced to beg the question of "discovering interests" by setting fixed subjects in competitions.

People's interests can also be discovered by personal conversation and enquiry, but caution is required in judging this matter from the opinion of a few leaders whom one knows well; every publisher knows the man who brings along his manuscript and assures him that all his friends will read it.

In the early stages it is important to supplement these methods by making plenty of material readily available for people to read, and judging by the sales where their interests lie. There is nothing like "box office" for judging the appeal of literature; hence the importance of a really good distribution system.

When we have got some idea of where people's interests lie, we must turn to the question of authorship. Literature bureaux have fostered indigenous talent as well as other sources right from the start. This idea of developing local authorship right from the beginning occasionally surprises people, and one hears protesting murmurs that "our people haven't reached that stage yet." But experience elsewhere has been that a local authorship can develop very quickly, even among people who have not received a great deal of formal education. Judging by the progress seen in places like the Netherlands New Guinea, where people with very little education indeed display a remarkable variety of talent, there is every reason to suppose that local authorship in the Pacific would soon appear with a little encouragement.

Distribution and Sale of Books

We come now to the question of the distribution and sale of the books. The production of new literature depends as much on the existence of places where it can be sold as it depends on discovering authors and getting it printed. In the territories we have in mind, the turnover in book sales is often insufficient to maintain shops which sell only books and nothing else. Hence it is usually necessary to combine the selling of the books either with the selling of other things or with other activities.

Thus, books can be sold through missions, who have co-operated in many areas in the most admirable and helpful way, or through centres of native authority, administration points, general stores, and co-operative societies. In some places it has also been possible to arrange book boxes on railway stations, in villages and schools, in compounds, and to accompanying cinema vans. Mobile bookshops have been used for direct selling or for maintaining stocks in smaller centres.

In Northern Rhodesia, co-operation between the Publications Bureau and the United Society for Christian Literature enabled a chain of several hundred book-selling points to be established. In Nyasaland circumstances were different, and the Bureau established its own bookshops on behalf of, and with the aid of a financial loan from, the Nyasaland Government.

The next problem is publication of the material produced. Here again the long-term aim of literature bureaux is publication on a normal commercial basis rather than subsidized publishing through their own or government presses, though in the early stages some direct printing rather than commercial publishing may be necessary. In the past the question of publishing new material has been greatly complicated by the problem of small editions, for the price of an individual book does not come down to a reasonable level unless the overhead costs of producing it can be divided among a large number of copies. And in the areas with which we are concerned, the size of an edition may be restricted for a number of reasons; it may be because it is designed for a small language group, or because of lack of purchasing power among the population, or because we have not yet learned enough about popular demand, or simply because there may not be many people who can read.

However, it may safely be said that with various new technical means of producing books which are now at our disposal, combined with special financial procedures devised by literature bureaux, the question of the small edition is nothing like the serious problem it once was. It has therefore become possible to give more attention to such things as format, production styles, typography, and so on, not only because we need to find out what is attractive to the people who we hope will buy our wares, but because we believe that although our books must be cheap they need not necessarily be nasty as well.

Thus in recent years, co-operation between literature bureaux and publishers has been fruitful in producing scores of attractive books at realistic prices; and although we adhere to our belief in the necessity for sound economics if literature is to be increased, we hope that anything we may be allowed to do in the Pacific will be as attractive as those delightful publications which preceded our arrival, namely, the School Journals produced by the New Zealand Education Department for their Pacific territories, and *Legends of Micronesia* produced by the United States for theirs.

Animal Production in the South Pacific

The problems associated with animal production in the South Pacific, with special reference to cattle, are discussed in this article.

By R. B. KELLEY*

A half-bred Jersey-Zebu from the United States (Kankrej type), used for breeding purposes at the F. D. McMaster Field Station, Liverpool, New South Wales.

MOST domestic animals are raised to provide human beings with food or clothing. The nature of the animals in any situation is controlled by the requirements of the people, and also by the local environments which establish limiting factors for particular varieties.

Requirements in the South Pacific area vary, and are often ill-defined. There are three main considerations. Firstly, native peoples living independently may need animal proteins to supplement a deficient diet. Secondly, members of the same community when organized in labour lines receive a specified weekly ration of meat, which is largely beef. Thirdly, European populations in the same area, but with different living standards, require meats of several kinds, and also dairy products.

In Papua and New Guinea approximately ten million pounds of meat are imported annually. This supplies the weekly ration for labour lines, and partly takes care of European needs. However, it makes little, if any, contribution towards supplying animal proteins for native peoples living independently.

Natives in the highlands of Papua and New Guinea sleep naked around fires in ill-ventilated huts so that they may keep warm during the cold nights. Without either an animal fibre from which cloth for covering could be woven or a vegetable fibre from which padded rugs could be made, use of well-ventilated homes is impossible. Natives on the coastal fringe, however, have no need for such fabrics, and enjoy living in dwellings open to the air.

Similar statements could be made about many other Pacific territories. They are sufficient to show that the specification of local needs is a prime requirement before the animal population most appropriate to satisfy them can be determined.

That Papua and New Guinea have thousands of acres of open grass country on which cattle could be grazed to supply most of the meat that is now imported does not obviate the necessity for careful analysis of needs Nor does the fact that the opportunity may exist to graze cattle on all South Pacific islands indicate that large numbers should be taken there. Local needs and conditions are critical.

Furthermore, the importance of environmental conditions as restricting factors cannot be over-estimated. Animal varieties have ecological requirements which restrict their range of utilization. Wool-growing sheep are found in many hot, dry parts of the world. They are also in many wet, cold parts. They do not, however, thrive where temperatures and rainfall are both high.

Similarly, a large volume of recent research work has shown that at atmospheric temperatures above approximately 80 deg. F., European types of cattle are on the threshold of distress and begin to exercise their functions of internal heat regulation. At temperatures above and of the order of 100 deg. F. they are more or less seriously inconvenienced. Their hours of grazing are largely restricted to those of darkness. If the grazing available to them during those hours is not highly nutritious, their productivity falls. Moreover, their energy requirements increase directly with the effort they have made during the day

* Dr. Kelley is Officer-in-Charge of the F. D. McMaster Field Station at Liverpool, N.S.W., and Assistant Chief of Division, Division of Animal Health and Production, Commonwealth Scientific and Industrial Research Organization.

to control their body temperatures by increased respiration.

These observations do not indicate that European cattle will not survive and produce in such environments as those of the South Pacific. European cattle are in fact surviving and producing, both in Fiji and to a lesser extent in Papua. Whether they succeed or not depends upon the extent to which they are protected from the full range of severity of environmental stresses. Protection may be afforded by supplementary feeding, provision of shade or by some other means. Density of cattle population is also of importance, principally in relation to the availability of food to individuals when all have restricted grazing time.

No dogmatic statement is possible with respect to any of these matters. In every instance, the relation that any species of domestic animal bears to its environment presents a separate ecological problem. Moreover, there are two environments. One has reference to climatic and other natural conditions, and is associated with the degree of care and attention given to the animals. The other is their economic environment, and is related to the usefulness of the animals to man. They may provide him with draught for transport or cultivation, with clothing or with food. They may also provide him with a commodity which he can exchange for something else.

Within this pattern, some animals or varieties of animals are more useful than others. It may be that experience over many years has shown which type has the most advantageous relation to both environments. The merino sheep in Australia is a case in point. In other instances, however, there may be no such guidance. Broadly speaking, that is the case in the South Pacific area. Few populations of domestic animals have been established in South Pacific territories for very many years, or in large numbers. Possibly, with respect to wholly natural surroundings, the pig is the only instance.

In these circumstances, great caution must be exercised against dogmatic statement not based on local evidence. Reliance should be placed on scientific study, by means of which homoclimes or regions of similar climate can be determined. Animal populations existing in one region within a certain climatic group can be expected to be equally well adapted to exist in other regions of similar climate. The possibility is then examined by experiments designed to disprove or establish it.

This approach has been adopted by the Commonwealth Scientific and Industrial Research Organization with respect to tropical cattle production in Australia. Zebus and Africanders have been imported from the United States; Red Sindhi and Sahiwal cattle, both Zebus, have been brought from Pakistan to Papua. The latter are being held in quarantine in Port Moresby until it is established beyond all doubt that they will not introduce new diseases further to complicate the situation in North Australia.

These cattle will be bred and compared with European breeds on a research station practically on the Tropic of Capricorn, 22 miles above Rockhampton. There an endeavour will be made to determine not only which variety or varietal cross is best adapted to the natural and economic surroundings; research will also be undertaken to discover which physiological process of the cattle is responsible for any observed differences.

Such an experimental attack on the problem, because of its cost or on other grounds, may be impossible within, for example, the South Pacific area. In that event the investigation should be carried as far as the establishment of homoclimes. Thereafter it may be assumed that domestic animals are inter-changeable within the regions of similar climate. Animals well adapted and satisfying the needs of man in one climatic situation could be moved with advantage to another in which the same needs existed. The primary or natural and the secondary or economic environments must both be considered. The first step is to establish that a breed or variety of animal is adaptable to the conditions of the area under consideration. Then establish that a need, or demand, exists there for the produce of animals of that type. The final step is the introduction, or transfer, of breeding stock into the area. These three steps must be taken in the sequence given.

Cattle Breeds For Tropical Conditions

A short annotated list of relevant publications recently received by the South Pacific Commission library.

Breeding Livestock Adapted to Unfavourable Environments. F.A.O. Agricultural Studies No. 1. Prepared by Ralph W. Phillips, Chief, Animal Industry Branch, and Deputy Director, Agriculture Division, F.A.O.: vi, 178 pp., 44 tables, maps and chart, 71 illustrations, bibliography: F.A.O., Washington, 2nd printing, August, 1949.

This monograph is "an analysis of the adaptability of various types of livestock to geographic and climatic conditions." Chapter III discusses the adaptability of cattle to tropical and sub-tropical climates, and presents the results of experiments conducted in various tropical and sub-tropical regions of the world with many cattle breeds, species and crosses.

Among the authoritative research quoted is that conducted at the Iberla Livestock Experiment Farm at Jeanerette, Louisiana, where a procedure and formula were devised for calculating the heat tolerance of cattle. Using these techniques, coefficients of heat tolerance at Jeanerette* were calculated in 1944 for a limited number of animals of several breeds and crosses, which were placed in the order shown in the accompanying table.

In addition, results of work done in Tunisia, Jamaica, Trinidad, India, Ceylon, Northern Australia and South Africa are examined. The creation of the Santa Gertrudis and similar breeds in the United States is described. The importance of crosses between Zebu and European breeds is considered in relation to both milk and meat production in tropical regions.

"It must be recognized," the report concludes, "that in many areas, substantial improvement in the efficiency of livestock production can be obtained by improving the environment."

Breeding.	Sex.	Numbers		Coefficient of Heat Tolerance.
		Animals.	Tests	
Zebu	F	7	18	89
1/2 Zebu 1/2 Angus	F	19	67	84
3/8 Zebu 5/8 Angus	F	8	21	84
Santa Gertrudis	F	7	21	82
1/2 Afrikander 1/2 Angus	F	22	64	80
Jersey	F	34	34	79
1/4 Zebu 3/4 Angus	F	54	165	77
Grade Hereford	S	12	12	73
1/4 Afrikander 3/4 Angus	F	4	9	72
Angus	F	31	69	59

* Average morning temperature 90.0° F., relative humidity 82.8%, wind velocity 2.1 miles per hour. Average afternoon temperature 93.2° F., relative humidity 71.7%, wind velocity 4.5 miles per hour.

The Santa Gertrudis Breed of Beef Cattle, by Robert G. Kleberg, Jnr., King Ranch, Kingsville, Texas, 1952. 3rd printing, 15 pages, many photographs.

This popular booklet, published by the present Director of the King Ranch, summarizes, for the general public, the origin of and reasons for the work of cross-breeding and selection which resulted in the creation of the Santa Gertrudis breed.

The Santa Gertrudis Breed, the Genesis and Genetics of a New Breed of Beef Cattle, by A. O. Rhoad, Journal of Heredity, Vol. XL, No. 5, May, 1952, pp. 115-126; various photographs and graphs; Washington, D.C.

Mr. Rhoad, who now directs selection work on the King Ranch, gives in this article the genetical details of the creation of the Santa Gertrudis.

Zebu Cross Cattle in Northern Territory, an Ecological Experiment, by R. B. Kelley, D.V.Sc., C.S.I.R.O., Bulletin No. 172, Melbourne, 1943; 96 pp., maps, graphs, bibliography.

This study provides useful information on the history of cross breeding between European and Indian cattle in various tropical and sub-tropical regions of the world, particularly in Australia. It consists mainly, however, of an analysis of the observations carried out on five cattle stations in the Northern Territory on the progeny of crosses between Zebu and European breeds in different blood proportions, in relation to the ecological factors in this part of the Australian continent. The author discusses the value of the progeny and the management of Zebus and their crosses under Australian cattle-raising conditions.

Dr. Kelley expresses the opinion that the nervous disposition of Zebu cross cattle is closely related to their management. "On the coastal properties where the cattle are frequently mustered and yarded for dipping," he writes, "no great difficulty has been experienced with the half-breed."

There is an extensive bibliography at the end of Dr. Kelley's report.

Some Data on Cross Breeding of European Breeds and Cross Breeding in Conjunction with Brahman and Afrikander Cattle, in "Observations regarding Livestock and Agriculture in Britain and the U.S.A.," Appendix D, by J. H. Allen, Q.D.A., Annual Report of the Bureau of Investigations, Queensland, for the year 1951; pp. 41-63; Brisbane, 1952.

Mr. J. H. Allen, Technical Officer of the Queensland Bureau of Investigations, on his return from an official visit to Great Britain and the United States, presented in his report some observations on the most recent developments in the work of selection, cross breeding and hybridization carried out in the United States, particularly on the creation of the new breed 3/8th Brahman - 5/8th Angus.

La Race Charolaise et la Production Mondiale de Viande (The Charolais Breed and World Meat Production), by Emile Maurice, Revue de l'Elevage et des Productions Animales Francaises, Paris, December, 1951, No. 12, Illustrated.

M. Emile Maurice, President of the Charolais Breed Export Association, gives in his article an outline of the various crosses made in the United States between European and Indian breeds. He particularly stresses the "Charbray," the result of the Charolais-Brahman cross.

Livestock Breeding Problems, from Section 11 (b), Animal Husbandry, (2) Research Operations, by H. E. Tornby. Annual report of the Deparment of Veterinary Science and Animal Husbandry, Tanganyika Territory, 1937, Dar es Salaam, 1938.

This section deals particularly with observations made on various crosses, the first of which was effected in Tanganyika about 1926; Afrikander-Zebu, Friesian-Zebu, and Ayrshire-Zebu.

It is interesting to note that the author began his report with a quotation from Wriedt's *Heredity in Livestock.* "The basis of all profitable animal husbandry is, and ever will be, good, judicious feeding."

The Motuovini Introduction Garden, Tahiti

IN 1920 Mr. Harrison W. Smith, a former instructor at the Massachusetts Institute of Technology, settled in Tahiti. On a property which he bought at Motuovini, in the Parari district, Mr. Smith proceeded to establish an introduction garden of economic and ornamental plants which he had occasion to study in the course of his extensive travels in tropical areas.

It was he who introduced the Sarawak grapefruit tree now very common in Tahiti.

Between 1922 and 1938, Mr. Smith introduced more than 650 different species into his garden. On his death in 1947, he left the Motuovini property to M. Jean Boubée of the Department of Agriculture, French Oceania. M. Boubée, who was responsible for developing the government introduction garden at Pirae, did everything possible to maintain the large existing collections.

In 1952, Mr. Cornelius Crane bought Motuovini and proceeded to restore and enlarge the collections which occupy 45 acres. This work he entrusted to M. von Schönburg. As he restored and expanded the garden, M. von Schönburg compiled an extensive card index file of data on the tropical economic plants of possible interest for French Oceania.

In the list of plants introduced into Motuovini, there are cover and pasture plants such as *Centrosema pubescens, Callopogonium mucunoides, Leucaena glauca,* etc., tropical fruit trees, beverage plants, such as *Coffea arabica, Coffea stenophylla, Cola acuminata,* shade trees, forest species, perfume plants, various species of *Derris,* etc.

The development of this introduction garden is an important achievement of a completely private nature that is of interest to all territories of the South Pacific.—*J.B.*

Santa Gertrudis Cattle In Queensland

An 18-months-old Santa Gertrudis bull, one of the first shipment, illustrating the sleek hair and loose skin characteristic of breed.

In 1952, a number of Santa Gertrudis cattle was imported into Queensland, arousing great interest among graziers in the sub-tropical and tropical zones of Australia. The performance of animals of this breed in Queensland will be watched with interest by cattle breeders and Departments of Agriculture in South Pacific territories. Below are published extracts from an article on this subject entitled "The Santa Gertrudis Breed of Beef Cattle and Its Possible Use in Queensland" by R. D. Chester and K. E. Howard, of the Cattle Husbandry Branch of the Division of Animal Industry, Queensland Department of Agriculture and Stock. It appeared in the "Queensland Agricultural Journal," Vol. 75, Part V, November, 1952.

SANTA GERTRUDIS (3/8th Brahman—5/8th Shorthorn) is a new breed created at the King Ranch in Texas by crossing European and Indian species of cattle; in this case, British Shorthorn and American Brahman or Zebu.

Starting in 1910 with a half-bred Shorthorn Brahman bull, the work of hybridization and selection produced in 1920 a bull, "Monkey," from the bull "Vinotero" (3/4th Brahman blood) and a cross-bred cow (1/16th Brahman blood) descended from the 1910 half-bred bull. Here is Chester's and Howard's description of the methods then used to create Santa Gertrudis:—

> Immediately the bull "Monkey" was selected by progeny test as the outstanding sire available, the whole breeding policy of the Santa Gertrudis breed was concentrated on using "Monkey" and his offspring to the maximum possible extent. "Monkey" was mated to crossbred Brahman x Shorthorn heifers with proportions varying from three-eighths to seven-sixteenths Brahman blood, and for many years now only "Monkey," his sons, grandsons, daughters and granddaughters have been used in the stud herd. In all cases careful selections have been made and only the best individuals of red colour have been used.
>
> General improvement in the breed is being maintained by using the best male descendant of "Monkey" in the top stud herd and using the sons of this bull on a herd consisting of some 400 cows.

The Santa Gertrudis Breeder's International, a Society which groups Santa Gertrudis breeders to protect the interests of the new breed, was founded in May, 1952. This association defined the standards for Santa Gertrudis, which are reproduced and studied in detail in the article under review. The authors give the following description of the Santa Gertrudis type:

> This is a breed of beef cattle originating from the incorporation of five-eighths British Shorthorn and three-eighths American Brahman. The cattle are whole red in colour, sometimes showing small amounts of white on the underside and occasionally white on the forehead. Skin, horn and hoof pigmentation is red.
>
> The cattle are large, with heavy bone. The hair is short and straight, and the hide is loose and thin, with ample neck folds and sheath. The ears are fairly large in size and drooping. A small hump is evident immediately forward of the wither.
>
> The rump is broad and shows only a moderate slope. The thighs are broad and full and the twist full and deep. The legs are of medium length and set squarely on the body.

The Queensland authors emphasize the nervous disposition of the Brahman and the possible transmission of this defect to the various crosses in which they participate:

> Brahman cattle are generally of a highly nervous disposition, which has rendered them and their crosses with

A group of hand-fed Santa Gertrudis heifers on the King Ranch.

British cattle unsuitable for use in poorly improved country. Unfortunately the nervous temperament of the Brahman seems to be strongly inherited by the crossbreds. This has proved one of the least satisfactory features of Brahman-cross cattle in Queensland. The Santa Gertrudis Breeders' International lists nervous temperament as an objectionable feature when present in its cattle. In Queensland, breeders should go further than this and include nervous temperament amongst those qualities for which cattle are disqualified from classification.

Advantages of Santa Gertrudis

The authors discuss as follows the various possible advantages of the Santa Gertrudis:

. . . *Foraging ability.*—This is important in beef cattle in Queensland, where for several months of the year pasture is usually not readily available. An animal with ability to walk long distances and to graze for long periods of the day has definite advantages in such an environment. If Santa Gertrudis cattle prove to have better foraging ability than British cattle, this will be a useful attribute. There is little doubt that Zebu-crossbred cattle now existing in Queensland are better foragers than purebred British cattle under the adverse conditions existing in late winter and spring . . .

. . . *Mothering ability.*—There is evidence that Brahman-crossbred cattle are better mothers than purebred British cattle in certain areas of Queensland, but from time to time their fertility has been questioned. The mating of a higher percentage of Brahman-crossbred bulls than when British bulls are used seems to be an accepted procedure in Central Queensland, but otherwise there is little to indicate a difference in fertility between British and Brahman-crossbred cattle . . .

. . . *Reaction to high temperatures.*—There is little doubt that some strains of British cattle are affected by the high temperatures of North Queensland, particularly on the coast. Cattle which are not affected by high temperatures will graze for longer periods during the day and will not suffer the depression in appetite suffered by some strains of British cattle. This will be reflected in their ability to fatten at an early age during the hot period of the year . . . The loose hide and short, smooth hair of the Santa Gertrudis are responsible for its heat-tolerance, so retention of these characteristics is of paramount importance . . .

. . . *Resistance to insect pests.*—The most important external parasite of cattle in Queensland is the cattle tick (*Boophilus microplus*). This was eliminated from Texas prior to the evolution of the Santa Gertrudis breed. Undoubtedly the pure Brahman and its first-cross has superior resistance to the cattle tick than British breeds of cattle, but the resistance retained by the Santa Gertrudis is not known for certain. The breed retains the short hair of the Brahman as well as its ability to move the skin freely . . .

. . . *Rate of Growth.*—The real test of usefulness of the Santa Gertrudis breed in Queensland will be its ability to grow and fatten at a faster rate than the cattle now available to the pastoralist. *Only time and carefully controlled observations can produce satisfactory evidence on this point.* Until evidence one way or the other is available, the progressive grazier will retain an open mind on the subject. British breeds and the stud industry associated with them have played a very valuable part in the development of Queensland's pastoral industry. It would be unwise to throw away the great wealth of beef quality built up over a period of a century and gamble on easy gains from the introduction of a breed possibly inferior in beef qualities. On the other hand, the industry cannot afford to neglect experimenting with new material and to incorporate any worthwhile features that come to light . . .

Possible Uses of Santa Gertrudis

In their examination of the "possible uses of Santa Gertrudis in Queensland," Chester and Howard come to the conclusion that the possible advantages of this breed would suit it more for the cattle-raising areas north of the Tropic, particularly the coastal and sub-coastal districts in that area. They do, however, stress the fact that:

> . . . There are important differences between the climate of King Ranch and that of much of Queensland and it therefore cannot be assumed that because the breed does well at King Ranch, it will do equally well in Queensland . . .

The authors' conception of the practical use of the few Santa Gertrudis bulls recently imported into Australia is as follows:

. . . It must be clearly understood by cattlemen that the Santa Gertrudis breed is not just another type of Zebu or Brahman cattle. It is, in fact, a true-breeding composite of Brahman and Shorthorn which has been developed as an ideal beef producer under conditions prevailing in Texas. By correct use of the Santa Gertrudis, Queensland breeders may be saved 20 or 30 years of developmental work which would be necessary if Brahman x British crosses were used. This, of course, will only be so if the Santa Gertrudis thrives in the Queensland environment. There is, however, a right way and a wrong way to use such a breed if quick results and good economic returns are to be obtained. The right way is to base its use on a sound, planned breeding programme with a definite result as its objective.

There are two directions in which Queensland cattlemen can make use of the limited supply of Santa Gertrudis bulls likely to be available. Firstly, these bulls may be used for crossing with existing breeding herds for the production of first-cross slaughter animals; and secondly, the bulls may be used to grade-up existing herds from their present breed status to what amounts to purebred Santa Gertrudis.

Production of First-Cross Santa Gertrudis Slaughter Stock.—The cattleman who is dissatisfied with the present production of his herd but who is not prepared at this stage to set out to produce a grade Santa Gertrudis herd may be well advised to try this method of using this breed. Little permanent loss is likely to result from a trial of such a breeding programme. The existing breeding herd will not be affected and the offspring of the cross, even if not so successful as anticipated, will still be of some considerable value as slaughter animals . . .

Use of the Breed to Grade-Up Existing Cattle Herds.—It has been pointed out by a world authority on adaptation of

(Continued on page 16)

Rhinoceros Beetle Outbreak in Fiji

Eradication Campaign Under Way

A typical, well-managed coconut plantation in Fiji. Cattle and goats are grazed on the ground-cover and help to control weeds. Note epiphytic ferns on the trunks, an unwholesome feature.

EARLY in March the Director of Agriculture in Fiji issued a warning that the rhinoceros beetle, a devastating pest of coconuts, might have become established near Suva. A female beetle had been discovered under a hatch cover of a vessel which had come to Fiji from Western Samoa, and an adult female beetle was found in a Fijian home on the Suva Harbour foreshore.

Subsequent investigations have confirmed the infestation, and have disclosed that the apparent centre is in the Lami-Wailoku area between the Tamavua River and the Queens Road. Breeding has been found principally in dead sago palms and coconut logs, and in compost heaps. Beetles and breeding have also been found in the Tamavua and Nasinu areas to the east, and beetles and evidence of beetle damage to palms have been found to the west along Queens Road as far as Namuka Harbour. The numbers found up to the present are not large, totalling about 15 beetles and about 250 larvae.

The infested area is thus a long, narrow one, extending over approximately twelve miles in an east-west direction and probably occupying fifteen square miles. The Suva town area and the Suva peninsula are not known to be infested.

It is probable that the beetle has been present for a year or more, and it is possible the last hurricane may have aided its spread in an easterly direction.

Comprehensive Eradication Campaign

About one hundred men are engaged in survey work to establish the limits of the infestation, and in searching for and destroying all stages of the insect and in eliminating potential breeding places. It is expected that two hundred men will be employed in this work by the end of April.

The eradication campaign is being handled by the Department of Agriculture, but may at a later stage be directed by a committee operating on funds supplied partly by the copra producers' organizations and partly by the Government.

The campaign follows generally the measures in use in Vavau, Kingdom of Tonga (S.P.C. Technical Paper No. 34—*Rhinoceros Beetle Control in the Kingdom of Tonga,* refers). The regulations deal with the destruction of breeding-places of the beetle on land, and with the precautions to be taken by inter-island shipping, and to prevent infection from being spread by road.

No soil or compost material may be removed from the proclaimed area without permission. All dead coconut palms in the proclaimed area, whether standing or lying, are to be destroyed by fire, thrown into the sea or river, or split and the split pieces stacked in such a way that the air can circulate freely around each split piece. Occupiers or owners of land must report the presence of the beetles on their land, and must use their utmost endeavours to destroy them. Inspectors who have been appointed may enter upon any land, and may give instructions to the occupier or owner about steps to be taken to get rid of rhinoceros beetles or their breeding places. The inspectors may carry out necessary work themselves; if they do, the cost will be met by the occupier or owner of the land.

No vessel of two tons or more which has had contact with the proclaimed area is to leave until it has been inspected and all precautions taken to destroy any beetles found Crews of inter-island vessels are being instructed in the appearance and habits of the beetle. Mats, baskets and bundles of vegetables are possible vehicles for the accidental carriage of the beetle, and the collaboration of all intending passengers and of offi-

cials and members of ships' crews is being sought to help prevent the spread of the pest.

Inspection points may be set up on roads in an infected area, and inspectors will have power to examine a vehicle and its contents to make sure there is no risk of rhinoceros beetles being carried to clean areas.

Posters and specimens of beetles, eggs and grubs in glass-fronted cases are being widely displayed and are being supplemented by illustrated pamphlets in English, Fijian and Hindustani, on the habits of the beetle. The Senior Entomologist of the Fiji Department of Agriculture (Mr. B. A. O'Connor) has held demonstrations and lectures in Suva so that health, customs and police officers, and copra storemen employed by the commercial firms, will be familiar with the beetle and its habits.

Visit by Commission Specialist

A visit was made to Fiji early in April by Mr. L. J. Dumbleton, the Commission's plant and animal quarantine officer, to observe the extent of the infestation and the progress of the eradication campaign, and to discuss with officials of the Agriculture Department plans for future regional investigations on the control of the beetle.

Members of the Gilbert and Ellice, Cook and Niue Islands delegations, in Suva early in April en route to the Second South Pacific Conference at Noumea, were also shown over the infested area.

Research Council Meeting in June

The fifth annual meeting of the Research Council, the Commission's expert advisory body, will open at Commission headquarters on 8th June. It will last approximately ten days.

The Council will review progress made in the Commission's work programme since it last met a year ago, and will recommend extensions and modifications.

A list of Research Council members for 1953 appeared in the last issue of the *Quarterly Bulletin*.

Commission's Sydney Office at New Address

The Sydney (city) office of the Commission, hitherto located at 14 Martin Place, is now in Dalton House, 115 Pitt Street (telephone BW 3409).

A Note On . . . .

THE PROCESSING AND STORAGE OF CEREALS IN TROPICAL CLIMATES

By Dr. E. Hipsley
Medical Officer in Charge, Institute of Anatomy, Canberra

AN important problem of nutrition in hot moist climates such as there are in New Guinea and other islands of the South Pacific area, is the preservation during storage of flour, rice and cereals. Such foodstuffs are liable to attack by insects, moulds and rodents—and this is particularly true in the case of gristed products such as flour.

It is an accepted fact that wheatmeal flour and brown rice are nutritionally superior to white flour and white rice, but in many tropical countries, the use of the less-refined product has often fallen into disrepute because of its poorer keeping qualities compared with the more refined product.

Rice

Partly because of the comparatively rapid deterioration of brown rice, many people of tropical countries have become accustomed to the use of white rice, and resist any suggestion that they change.

Several methods for increasing the nutritive value of white rice have been developed. Parboiling of rice has been an accepted native custom in some parts of India. During recent years, efforts have been made to extend its use in the tropics. Another recent development has been the use of vitamin-fortified rice, which has been tried out on a large scale in the Philippines. There is an extensive literature on both methods.

In New Guinea during World War II, rice became an important item of diet of native carriers and of native refugees living in compounds. Because of the danger of beri-beri from excessive use of white rice, the Australian authorities developed a dried brown rice for use in native diets. This rice, which was grown mostly in the irrigation areas of the Riverina, N.S.W., was rice minus its husk, but with the germ, pericarp and aleurone layers intact. It was dried in a grain drier to reduce the moisture content below 10% and then packed in insect-moisture-proof containers, which were either 4 or 44-gallon steel drums or hessian bags lined with tarred paper. Rice prepared and packed in this way kept for comparatively long periods, and in the case of package in hessian bags lined with tarred paper, added very little to the cost of the rice. This method proved so successful during the War that, ever since, dried brown rice, packed as indicated, has been the only rice permitted to be imported into New Guinea for consumption by native labour.

Despite the apparent success of this method of marketing in the tropics a type of rice with good keeping qualities and superior nutritive value, there has not been to my knowledge any systematic study of the method. My visits to Hawaii and Fiji, and an examination of the literature, has led me to believe that the method is not widely known. In Hawaii, the Agricultural Experiment Station carried out an extensive study of the nutritive value, susceptibility to insect infestation and consumer acceptance, to white, parboiled, and brown rice. However, the brown rice (average moisture content 13.5%) was not dried prior to storage, nor was it stored in insect-moisture-proof containers as are used in New Guinea. In my opinion, further study of the keeping qualities of dried brown rice is very desirable, especially as an increased home production of rice in the South Pacific will raise questions as to the best methods of preservation and marketing.

Flour

Wheaten flour plays a prominent part in the diets of Indians living in Fiji. It is usually made into a flat, unleavened pancake called *roti*.

There are three types of wheaten flour on the market in Fiji, all imported from Australia.

White flour—ordinary 72% extraction flour.

Sharps—this is a slightly yellowish, more granular product than white

flour. It sells for the same price as white flour, but is much preferred by the Indians for the making of *roti* (white flour tends to make a tough, dough-y *roti,* compared with the more friable cake made from sharps).

Wheatmeal—this is flour of 100% extraction. At the present time, owing to the fact that wheatmeal is not imported into Fiji under the International Wheat Agreement, it costs more. It is not offered for general sale to the Indians, but it is sold to a small number of diabetics for whom it has been requested by the doctors. Very little information was available as to the preference for wheatmeal. Several Indians told me they would purchase it in preference to sharps, if it were generally available.

Information was obtained from a baker in Suva as to the length of time each of these three flours could be held in ordinary flour bags (180 lbs.) without disagreeable deterioration. Rough estimates were four weeks for wheatmeal, six weeks for sharps, and twelve weeks for white flour.

Some of the wheat from Australia exported to India is in the form of *atta* flour. This is 80-95% extraction flour, of not more than 12% moisture content, packaged in steel drums or in hession bags (60 lbs.) lined with tarred paper. *Atta* flour was originally developed for the use of Indian Army troops, and it is a reasonable assumption that it has comparatively good keeping qualities under tropical conditions. A somewhat similar product was an issue to Australian troops operating in New Guinea during World War II.

One wonders whether *atta* flour could, with advantage, have a wider use in tropical climates. If not already available, the collection of systematic information relating to its keeping qualities would be desirable.

Wheat

In respect of keeping qualities under tropical conditions, unmilled wheat is greatly superior to flour. The preparation of wheatmeal requires comparatively simple milling equipment. In India and Pakistan this is carried out by means of millstones turned with the aid of an ox. Machine-driven gristing mills suitable for preparing wheatmeal for local village consumption should be reasonably inexpensive. Local milling, with retailing in comparatively small quantities, would considerably simplify the problem of storage of wheatmeal in tropical countries which have a demand for this product.

Conclusion

To sum up, then, there exists a definite need for the collection of more information concerning the keeping qualities in hot moist climates of dried brown rice and of wheatmeal flour of low moisture content, packaged in water- and insect-proof containers. The possibilities of encouraging the development of local mills for the preparation of wheatmeal should be investigated.

* * *

Health Notes from American Samoa

By the Public Health Department

FOR the first time in the history of the training of American Samoan medical practitioners, one of them was sent overseas for post-graduate study. Saipele Matagi, resident, Medical Service, Hospital of American Samoa, completed a six months' course in the study and treatment of leprosy at the Hale Moholu Leprosarium in the Territory of Hawaii. In December of 1952, he returned to the Hospital of American Samoa to resume his duties as chief resident on the Medical Service, and to take complete charge of the Hansen's disease section. It is hoped that other Samoan medical and dental practitioners will evidence a desire for post-graduate training, and that further opportunities for this training will be developed.

* * *

Complete physical and dental examinations of all school children was begun in May, 1952, and completed in December. Total number examined was approximately 5,000. Of 4,768 children examined for dental deficiencies, 2,597, or approximately 54%, were proved to have caries. A complete report of this dental survey will appear in another publication. Definitive treatment of all children with dental deficiencies is under way. This has been a rather monumental task, and great credit is due to the Chief of the Dental Division and his dental practitioners for carrying it through.

* * *

Mass vaccinations for smallpox and immunizations for typhoid fever and D.P.T. (diphtheria, whooping cough, tetanus), begun last year, is continuing. It is expected this project will be completed by December, 1953. It is interesting to note that since the 1952 immunizations of approximately 6,000 children with D.P.T. vaccine, there have been no admissions to the hospital for whooping cough since March, 1952.

Santa Gertrudis Cattle in Queensland

(Continued from page 13)

cattle to tropical environments that *the recognized great advantage of the Santa Gertrudis is that with it the cattle raiser in the warmer climates now has available to him a breed that he can use in a grading-up programme.*

Their use as grading-up animals is by far the most satisfactory method of working the few bulls to be available in Queensland . . .

Thus a cross between purebred Santa Gertrudis and purebred Shorthorn produces a half-bred Santa Gertrudis calf. This beast mated to a second purebred Santa Gertrudis bull gives a three-quarters bred calf; the next generation will give a calf seven-eighths Santa Gertrudis and one-eighth Shorthorn; and the fourth cross will be fifteen-sixeenths Santa Gertrudis and only one-sixteenth Shorthorn. At this stage the animal in most cases will be indistinguishable from a purebred and in fact can then be classed as a high-grade Santa Gertrudis . . .

Prospective users of Santa Gertrudis bulls should give very serious thought to the breed of cattle with which the bulls will be mated . . .

There is, of course, no evidence in Queensland of the suitability of various breeds as foundation animals, but an enquiry addressed to the Secretary of the Santa Gertrudis Breeders' International and classifier for the breed was answered as follows:

Observations on many ranches as well as on King Ranch indicate that preferred foundation stock would be in about the following order: part Brahman-Shorthorn, part Brahman-Hereford, straight Shorthorn, straight Hereford, and finally straight Angus.

It cannot be too strongly stressed that the final success of any grading-up programme may well depend on the quality of the cow herd originally selected for mating with the available Santa Gertrudis bulls. Only selected cows of whatever breed is chosen should be used . . .

The great merit of Chester and Howard's appraisal is that it considers the usefulness of Santa Gertrudis in a cattle-raising area, the ecology of which corresponds in many respects to that of some South Pacific territories.

It therefore seems certain that observation on the behaviour and yield of Santa Gertrudis in the tropical coastal area of Queensland may yield valuable information on the usefulness of Santa Gertrudis for some territories within the scope of the South Pacific Commission.

Marketing Developments in the Trust Territory of the Pacific Islands

A survey of post-war commercial development in the Trust Territory of the Pacific Islands, under United States administration.

By NEIL T. HOUSTON
Economist, Island Trading Company of Micronesia

DUE to the succession of foreign nations controlling the islands which are now the Trust Territory—Spain, Germany, Japan, and United States—and the complete disruption accompanying World War II, the business structure has had no continuous evolution, and can now be said to date from 1944-45, the years in which American military forces first occupied the islands. The years since then have seen significant developments, of which the broad outlines are sketched in this article.

During the Japanese administration the islands were heavily colonized by Japanese nationals, and an extensive network of trade stores operated by Japanese was established. Such stores existed even in small remote hamlets, where the storekeepers bartered trade goods for copra. In this system there was very little participation by the Micronesians, who remained primarily engaged in agriculture and gained almost no commercial experience. Following the American conquest in World War II all Japanese nationals were returned to their homeland. Trade had already been paralyzed by the war, and the evacuation of the Japanese swept away even the framework of commerce.

This economic vacuum was readily apparent, and broad economic policies for the military government were soon established. In October, 1945, the Commander-in-Chief, U.S. Pacific Fleet, wrote as follows:—

> Part of the mission and duty of the United States naval military government is the institution of a sound programme of economic development of trade, industry, and agriculture along lines which will ensure that the profits and benefits accrue to the native inhabitants and which will assist them in achieving the highest possible level of economic independence.

And again in December, 1945:—

> The establishment for the profit of aliens, of enterprises which tend to maintain the native economy at the level of cheap labor and those which do not permit the natives to enjoy the full benefits of their own labor and enterprise shall not be tolerated.

These principles have been restated from time to time in other words but have continued to reflect a basic economic policy of the Trust Territory to the present time. This emphasis on the development of the island people themselves has necessarily meant that progress has been gradual, and that direct government participation in trade has been required until locally-owned private business could organize and learn.

Trade Restoration Methods

After initial emergency relief measures by the military government, efforts were immediately begun to restore commerce through providing markets for island products and offering imported merchandise for sale. This work was undertaken by the United States Commercial Company, (USCC), a civilian agency of the United States Government. Early in 1946 this company established trade stores on the seven main islands, where there were also military government units—Saipan, Yap, Koror, Truk, Ponape, Majuro and Kwajalein. Trading was begun directly with consumers at the retail level, there being at that time for practical purposes no other marketing facilities in existence.

To develop trading facilities within the framework of the basic government economic policies the USCC in 1946 began sponsoring native-owned retail stores in the villages throughout the islands. These early stores were established as community enterprises operated by representatives of the village councils or chiefs. They were in effect municipal stores. This form of organization was fostered in order to prevent a few individuals from exploiting for private profit the extreme scarcity of goods which prevailed immediately after the war, the USCC being unable to procure adequate supplies for the islands for many months. These stores were assisted with credit and merchandising service.

A number of these community enterprises still exist, particularly in the Marshall Islands in outlying atolls, but for the most part the community form gave way to private ownership as merchandise became plentiful and the need for the group undertakings appeared to cease. The local people have been allowed to follow their own inclinations in this respect, and sustained loyalty to community economic enterprises has frequently not been forthcoming.

During 1946 trade was meagre, due both to the scarcity of merchandise and to lack of purchasing power in the islands while the copra industry was recovering from the war. Nevertheless, the nucleus of a native-owned marketing system was established. As soon as retailers came into existence an attempt was made to foster wholesalers as well. By the logic of population density and transportation facilities, the latter are confined largely to the seven communities in which government administrative units are located. A place was made in the distribution system for these wholesalers by allowing them additional discounts on goods purchased at the USCC stores. In the early stages of their development these wholesalers performed no economic function, since the USCC could easily have served directly the needs of all retailers in the various districts. The reason for their existence was the

An interior view of a native-owned store on Yap. —Photo by Raymond M. Sato.

hope that they would in time be able to handle their own importing and thus remove the need for a government trading agency. In several places this hope is now being realised.

New Trading Company

In 1947 the military government was succeeded by civil government under the United Nations Trusteeship Agreement, and in January, 1948, the United States Commercial Company was succeeded by the Island Trading Company of Micronesia, an agency of the Trust Territory Government. Commercial policies and the assistance provided to local trading enterprises have continued under these new organizations with little change, and the system just described has continued to develop. The Island Trading Company has withdrawn from retail selling to consumers as fast as locally-owned stores could serve the market and by the end of 1950 was out of the retail business.

Local retail establishments have multiplied until there were 493 reported on June 30, 1952. Most of these stores are very small, many of them each consisting only of a few shelves in the owner's home. Overextension of credit or the consuming of capital by the owners has terminated many ventures, but in view of the limited education of the people and the almost complete absence of previous business experience, the present network of locally-owned retail stores represents very substantial achievement on the part of the Micronesians and is a considerable step toward the management of their own affairs.

The locally-owned wholesale companies have also made significant progress. On Saipan, where the people have long been closely associated with Guam and are much more sophisticated than residents of the other islands, local traders immediately began importing their own merchandise from Guam, and they have not depended on the government trading company to perform the import functions. Two European residents of Ponape were able to resume trading operations as soon as supplies were available after the war.

A half dozen other wholesalers in the Trust Territory are new post-war firms. These are joint stock companies whose shares are widely held in the areas in which they operate. At the outset they purchased all their merchandise from the government trading agency, which performed the importing function. As their experience and competence increased and as their capital resources permitted, these firms have imported a growing proportion of their merchandise directly through private channels.

This development has been especially rapid in cases in which the firms have employed salaried American managers to direct their activities. In those cases where native managers have borne full responsibility themselves, development has of necessity been slower as the complexities of foreign trade are gradually learned with advice from government and Island Trading Company representatives. In these latter cases the Island Trading Company still imports the majority of the merchandise and in turn sells it to the local wholesalers, but definite progress by native management can be observed.

The wholesale companies, located as they are in the major population centres, have tended to engage in both wholesale and retail business. Possessing superior management and greater capital than the small retailers, these companies can operate in conjunction with their wholesale warehouses a retail outlet which is relatively more attractive than the small retail shops in the vicinity. As a consequence a large share of the retail business in the populous areas is done by integrated firms which combine in one organization the functions of importer, wholesaler, and retailer.

The Copra Industry

Copra is purchased in outlying islands by the local storekeepers, who in turn carry it to district centres for resale in their own boats or sell it to representatives of the Island Trading Company who call at the islands during the periodic visits of government administrators. Several of the private wholesale companies have boats which make trading trips to outlying islands to sell goods and purchase copra. At present all copra is finally purchased by the Island Trading Company for export, but the local firms are encouraged to perform as much of the preliminary collection and assembly as possible, and are doing so to the extent their capital resources permit.

The total volume of business which can be done at any location is severely limited by the small populations and low income of the area, the most

populous district containing only 16,000 persons and the largest copra collection point receiving less than 3,500 tons annually. On the other hand, an importing and wholesale business must be conducted on a reasonably large scale in order to be economical because of the skilled management required and the excessive procurement and shipping costs which accrue on small orders. This means that there is enough business to support only one or two importing wholesalers in any one district, which in turn raises the problem of monopoly exploitation by these firms.

This problem has been met to date by the presence of Island Trading Company stores in the seven district centres. Although the Company encourages retailers to buy from the local wholesalers it does stand ready to sell to retailers, or even consumers if necessary, on demand. Company prices to the wholesalers are lower than its prices to retailers, which in turn are lower than its prices to consumers. The local firms are thus protected in making a reasonable profit, but the government agency affords an alternative source of supply in case local firms should attempt to exploit the people. The Island Trading Company is a temporary agency to serve until private firms become established, and it will soon disappear from the scene.

Little Present Need for Co-operatives

To date little need has been felt among the people for the community store or a co-operative form of organization once the war-induced shortages were overcome, but should existing firms attempt to exact unduly high margins in the future a revival of this idea may be expected.

The co-operative movement, which has proved so successful in the Gilbert and Ellice Islands, seems to offer the logical solution to the marketing problem in small isolated areas where competition cannot be expected to force reasonable prices and services. However, until the need for price relief is felt and a reasonable degree of sophistication in such matters has been achieved through more widespread education, an attempt to promote the co-operative movement in the Trust Territory would be premature.

Cook Islands Project for Growing Case Timber

IT is estimated that £50,000 a year is spent on case timber by the orange and tomato growers in the Cook Islands. This sum, which leaves the territory year by year and which will increase with the inevitable expansion of the two industries, could be largely saved if suitable case timber were grown in the islands.

Among the possible soft-woods it has been demonstrated that *Albizzia* (*falcata?*) makes very rapid growth in Rarotonga, and, according to Mr. Maurice Baker, Director of Agriculture of the Cook Islands, provides a very suitable timber for orange and tomato cases. Mr. Baker is of the opinion that extensive tracts of land, at present unutilized, are available in Rarotonga and elsewhere in the Lower Cook Group for trial plantations of *Albizzia,* which, if successful, would be a valuable asset to the islands.

Case timber is a problem in other fruit-growing island groups in the Pacific; such as, for instance, Fiji, Western Samoa and Tonga, where bananas are an important export.

F.A.O. Meetings on Fishing Boat Design

TO encourage the exchange of information on latest advances in the design and equipment of fishing boats, the Food and Agriculture Organization of the United Nations will sponsor two meetings—one in Paris from 12th to 16th October and another in Miami, Florida, from 16th to 20th November, 1953.

F.A.O. has invited all member countries to send official delegates, and hopes that commercial firms in all regions will send observers. The Paris meeting was scheduled mainly for Europe, most of Asia and Africa, and the Miami meeting for the American continents and the Pacific.

Designers of fishing boats and manufacturers of equipment are expected to be interested in the meetings, as many of the papers and films to be presented will deal with new and improved craft and equipment of all sorts.

The agenda, the same at both meetings, will include a review of different types of boats from all over the world and discussions of fish handling and processing in factory ships, the shape of boats, construction methods and materials, choice of engines, gear for handling nets, and arrangements for handling the catch on board.

Vacant Medical Research Post

APPLICATIONS are invited from suitably-qualified persons for appointment as research specialist in mosquito-borne diseases (especially filariasis and elephantiasis) with the South Pacific Commission. Salary will be within the range of £stg.1,500-2,000, plus certain allowances.

Applicants should be registered medical practitioners possessing a diploma in public health and a wide knowledge of parasitology, entomology and zoology. Previous field experience is essential. Fluency in English and French is very desirable.

The successful applicant, who will be appointed for a period of three years, will be required to undertake research into mosquito-borne diseases prevalent in the South Pacific area, and to co-ordinate research activities.

Further information is obtainable from the Secretary-General of the South Pacific Commission, Noumea, New Caledonia. Applications close on 15th May, 1953.

Papua and New Guinea Copra Sold to Sweden

THE Minister for Territories, Mr. Paul Hasluck, announced in Canberra on 10th March that the Australian Government had completed a sale of 5,500 tons of copra to Sweden at £stg.74 f.o.b. per ton. The sale was on behalf of the Papua and New Guinea Copra Marketing Board. The price compared favourably with the British Ministry of Food contract price of £stg.65 f.o.b.

The sale was made with the agreement of the British Ministry of Food, which, under a long-term contract, has first call on all Territory copra surplus to Australian requirements.

Papua and New Guinea planters will benefit to the extent of about £A.60,000 as a result of the sale.

Crop Promotion in Papua and New Guinea

To encourage the diversification of food and export crops in Papua and New Guinea, the Department of Agriculture, Stock and Fisheries maintains a number of agricultural experimental stations. The article below briefly reviews their current activities.

By the Department of Territories,
Commonwealth of Australia

Tea trees in the Garaina Tea Project in the Waria Valley, New Guinea. Crotaleria shade trees have been planted between the rows of tea bushes. This project is located in the hills at an altitude of 2,700 feet.

IT is the policy of the Papua and New Guinea Administration to encourage diversification of food and export crops. The Department of Agriculture, Stock and Fisheries of the Papua and New Guinea Administration operates a number of experimental stations in Papua and New Guinea. While engaged on agricultural experiments and aiding general development, these stations serve as bases from which agricultural extension officers carry out their work of showing the people in their village gardens how to improve agricultural methods. They also serve as agricultural demonstration centres.

The diversification of local agriculture is another important aim of these stations. The Department has imported new and improved varieties of local foods into the territory, and after testing on the stations, has distributed seeds and planting material on a wide scale. The Department has about five hundred different types of crops under observation in which high-level, medium-level and low-level crops are represented.

The main lowlands experiment station at Keravat, near Rabaul, has 360 acres planted with crops. Its activities include cocoa breeding, selection and propagation; manila hemp selection and propagation; entomological research on pests of cocoa and coconuts; seed production for cocoa; coffee, fibres and local foods and the demonstration and testing of oil palm, kapok, pepper, cinnamon, vanilla, derris, cotton, castor bean, rubber and indigenous food crops.

High-level crops are dealt with at the Highlands Experiment Station at Aiyura, Eastern Highlands (altitude 5,500 feet), where the principal experimental work is on cinchona, coffee, tea, pyrethrum and indigenous food crops. The station supplies coffee and tea seed to planters, and produces cinchona bark for use by the Department of Health in controlling malaria among the villagers.

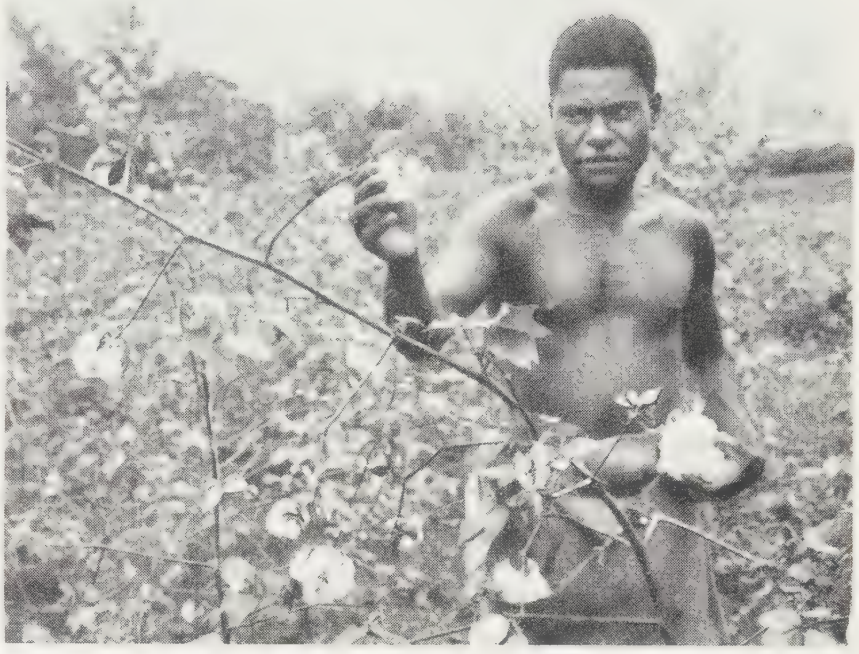
Many of the now widely-distributed local food crops were introduced through this station. The tree tomato (*Cyphomandra*), for instance, is almost a staple food in some areas. Cereals, beans and root crops grown here have been distributed throughout the Highlands. Passion-fruit culture carried on by local inhabitants and Europeans for fruit juices and pulp on behalf of an Australian company, developed as a result of work carried out at Aiyura.

Subsidiary experiment stations are located at Epo (Mekeo Central District), Garaina (Morobe District) and Bubia (near Lae).

At Epo the main experimental work is on mechanised rice production, breeding and selection of rice strains, and production of rice seed. Work is also done on fibres, tobacco, peanuts, bananas and local foods.

The chief functions of the station at Garaina (2,200 feet) are to test out

Cotton grown experimentally at Sogeri Agricultural Station, near Port Moresby, Papua, has done extremely well. Freedom from insect pests has been an important contributing factor in the success of this experiment.



tea growing under semi-commercial conditions to the final stage of processing for market, to supply seed and planting material to private estates, and to provide technical and economic data to planters. It now has 40 acres under tea and it is intended to extend the area to 300 acres.

The Bubia station is doing experimental work on cocoa, rice, fibres, peanuts, bananas and indigenous food crops.

The Department of Agriculture is carrying out experimental work on kenaf fibre—chiefly at Laloki, near Port Moresby. Other agricultural stations are located at Bainyik (Seipik District), Madang, and Popondetta (Northern District).

Following are notes on the main groups of crops:—

Vegetable Production: Vegetable and indigenous food production has increased both on the Highlands and around the main centres of population. Most vegetables produced on the Highlands are grown in the villages, although the bulk of those grown at Wau (altitude 3,000 feet) are produced by Europeans.

The diversity of vegetables and food crops has increased over the last few years, both in species and varieties. New varieties of sweet potatoes have been introduced from America and Australia, and some Japanese varieties, such as Okinawa, have been tried. These newer types are much heavier yielding, and their cultivation has spread throughout the territory. Sweet potato production by local inhabitants in Papua and New Guinea now probably amounts to much more than the total production of the rest of the South Seas and Australia. Hundreds of thousands of acres are grown each year.

Cereals: Much interest has been shown in the production of maize and maize meal in the Highlands Districts. It is anticipated that this interest will spread because there is an extensive use for storable cereal crops of high food value. Sorghum and rice come into this category. Some excellent grain types of sorghum have been introduced and tried, and seed is available.

The Catholic Mission at Rabaul is making a high-quality loaf from sorghum seed meal. Sorghum is also an excellent stock and poultry food.

Several important rice-growing projects have been introduced by the Department of Agriculture. One is in the Mekeo District of Papua, one at Amele near Madang, and another at Dagua near Wewak. The purpose of these projects is to demonstrate to the people the value of rice, and to encourage them to grow it as a cash crop. This objective has been successful. For example, 59 villages are engaged in the Amele project.

A vigorous programme of extension work is being commenced among the people of the Madang and Sepik Districts to encourage them to grow more rice in their village gardens. A number of extension officers will be specially recruited for this purpose by the Administration, and rice-processing machines and hand tools are to be sold to villagers on easy terms.

Cocoa and Coffee: In the Gazelle Peninsula of New Britain, agricultural officers are encouraging cocoa-growing among the villagers, who have shown enthusiasm for this crop. Plantings have expanded rapidly under the tuition of the Department of Agriculture, and over 500,000 trees had been planted in that area by June, 1952. Selected local inhabitants are given instruction in cocoa-growing techniques. Work is being done at Keravat Experiment Station on vegetative propagation, especially raising cocoa from single node cuttings.

As a result of work carried out at Aiyura Station, villagers are now growing and marketing coffee.

Tea: New and improved tea jats, or varieties, have been introduced from Malaya and other sources. These have been kept free of blister blight and have been used for plantings at Garaina, Aiyura and Karanka in the Highlands.

Oil Seed and Oil Crops: Dwarf coconuts have been introduced from Ceylon. Early-maturing and high-yielding types selected from the Sepik are being propagated in a departmental experiment station near Rigo.

Non-dehiscent strains of sesame oil are being sought, and it is expected that the discovery of a suitable, even-yielding type will be a great advantage to the extension of cultivation of annual oil crops in the territory, particularly as milling facilities are now available.

Mr. David Best, farm manager at Erap Animal Breeding Station, near Lae, with native trainees and young Berkshire-Tamworth cross pigs. The wealth of native villagers is largely measured by the number of pigs they own. Introduction of pedigree pigs for crossing with native pigs is resulting in a big improvement in the local stock.

There are about 28 acres of oil palm at the Keravat Lowlands Experiment Station. The main objective is to establish cultivation in the Sepik, where there are wetter conditions and the villagers are expected to take an interest in this valuable crop.

Experimental work is being carried out with crops for the production of siccative or drying oils, e.g., tung oil, candle nuts and tetracarpidium.

The candle nuts tree is indigenous, extensively distributed and well worth exploitation. Plantation cultivation is being tried at Keravat.

The Department is trying out non-dehiscent varieties of castor bean, which may be suited to machine harvesting under the right conditions.

Peanut cultivation has increased both among local and European growers, and a small export trade has developed.

Fibre Production: Interest is being taken by both indigenous and European sections of the territory in the production of kenaf, manila hemp, sisal, pandanus and abroma.

It is anticipated that initial development of kenaf will be largely with European capital, but later it will be treated as a local crop, in the same way as manila hemp and sisal. Pandanus is a fibre almost exclusively produced by the local inhabitants.

Areas of mosaic-free manila hemp are being built up at Keravat Experiment Station.

Cotton: Dwarf types from Queensland as well as Sea Island and perennial cottons are under trial.

Quinine: Single plant selections have been made and high-yielding types introduced and, as a result of continued bio-chemical and selection work, some good quality quinine yielders are now available.

Spices: Most interest has been shown in true pepper. New introductions have been made, and good type pepper cuttings are available for distribution to interested growers, though not as yet on a large scale.

Pest and Disease Control: The Plant Introduction and Quarantine Station for the territory is located at Laloki, near Port Moresby. As far as can be ascertained, the territory of Papua and New Guinea is free from banana bunchy top disease. Other diseases which have been kept out of the territory include swollen shoot and witches broom of cacao, coffee rust, tapioca mosaic, passion fruit woodiness and many other serious virus diseases.

Insect pests of the coconut palm, one of the most important food and export crops, are being controlled by introduction of parasites. Pests particularly referred to are the rhinoceros beetle, which it is hoped to control by means of the scolia wasp, and the leaf-mining hispid, which is controlled by the wasp parasite *Pleurotropus parvulus*.

Direct methods of control are not widely known by the local inhabitants. They do use tobacco, derris, and to a lesser extent, D.D.T., but only under the guidance of agricultural officers. European planters are well aware of both direct and indirect methods of pest and disease control.

Collection and Preservation of Manuscripts

Deposit Notice No. 10

The following manuscript has been made available for deposit and reproduction by kind permission of the Rev. Dr. A. C. Cato of the Methodist Mission, Lautoka, Fiji:—

Cato, A. C.: *A Survey of Native Education in Fiji, Tonga and Western Samoa.* XX, 598 p., illus., bibls.

Microfilm positives of the above document (which is a Ph.D. thesis submitted at the University of Melbourne in 1950-51) may be obtained at a cost of Aust.£2 on application to the Executive Officer for Social Development, Box 5254, G.P.O., Sydney, N.S.W., Australia.

Deposit Notice No. 11

The following manuscript has been made available for deposit and reproduction by kind permission of Prof. S. H. Roberts, M.A., Litt.D., Vice-Chancellor of the University of Sydney, Sydney, N.S.W.:—

Henderson, G. C.: *A History of Government in Fiji,* 1760-1875. Vol. I, xxii, 356 p., illus., map; Vol. II, xiii, 675 p., illus., bibl.

Professor G. C. Henderson was Research Professor of History in the University of Sydney from 1937-1944.

Microfilm positives of the above document may be obtained at a cost of Aust.£4 on application to the Executive Officer for Social Development, Box 5254, G.P.O., Sydney, N.S.W., Australia.

South Pacific Commission

WORK PROGRAMME

A brief review of developments during the quarter ending 31st March, 1953, in the execution of the Commission's work programme, which at present substantially comprises 43 projects in the fields of economic development (13), health (9), and social development (21), together with related activities.

Economic Development

WHILE in Australia in February for the Conference on Regional Surveys held at Canberra by the Commonwealth Scientific and Industrial Research Organization, the Executive Officer for Economic Development took the opportunity of meeting authorities interested in the work of the Commission in the economic development field, and of discussing current activities with them. Dr. Kroon was also able to develop by personal contact the liaison previously established by the Commission's technical officers with institutions in Canberra, Sydney and Brisbane.

En route to the Canberra Conference, Dr. Kroon paid a brief visit to New Zealand for similar contacts and discussions with the authorities there. He also examined some of the research work of interest to the area being conducted at the Massey Agricultural College and Grasslands Research Bureau, Palmerston North, and the Ruakura Animal Research Station and Rukuhia Soil Fertility Station, Hamilton.

EXECUTION OF PROJECTS

E.1—Introduction and Distribution of Economic Plants

Introduction of economic plants to the area and their transfer within the area for study and improvement in special gardens and arboretums.

During his visit to Papua and New Guinea in January, the Deputy Chairman of the Research Council discussed this project with officers of the Department of Agriculture, Stock and Fisheries, in relation to the activities of the Division of Plant Industry. This Division directs a plant introduction and quarantine station at Laloki, near Port Moresby, undertaking original introductions under quarantine, preliminary multiplication of introductions, and distribution of planting material to departmental stations throughout the territory for economic testing of introductions.

The Plant Introduction Officer of the Division, Mr. G. Keleny, will shortly visit the Naduruloulou plant introduction and quarantine station maintained by the Government of Fiji with Commission assistance, with a view to more closely integrating the work of both stations. A grant-in-aid of £stg.150 has been made by the Commission towards the cost of Mr. Keleny's visit.

An amount of £stg.2,000, portion of the Commission's grant-in-aid for 1953 towards the operation of the Nadurulouloulou introduction garden, has been paid to the Fiji Government. A full-time Curator is to be appointed to augment the staff concerned with the development and management of the garden.

E.2—Cash Crops

To assist member Governments and territorial administrations to improve and increase the production of cash crops in the area, with particular emphasis on copra, cacao, coffee, tea and rice.

Copra: Mr. W. V. D. Pieris, Commission coconut and copra specialist, continued his regional survey during the quarter. He visited the Trust Territory of the Pacific Islands from 9th January to 28th February, 1953, calling en route at the Administration's headquarters in Honolulu. He left Commission headquarters for the New Hebrides on 18th March.

During his five weeks' tour of the Trust Territory he was accompanied by the Director of Economic Affairs of the Administration (Mr. Homer L. Baker), the Chief Agriculturist (Mr. Frank Murphy) and Assistant Agriculturist (Mr. Harold M. Mayo). The tour was confined to the Truk and Ponape Districts of the Eastern Caroline and Southern Marshall Islands which, with the Northern Marshalls, are the areas where more intensive coconut cultivation shows greatest promise.

According to Mr. Pieris, a most noteworthy feature was the absence of serious pests and diseases of the coconut palm in the areas visited. The Eastern Carolines and Marshalls are entirely free of the rhinoceros beetle which has done so much damage to coconut groves in the Palau District, almost completely wiping them out on some islands. Mr. Pieris stressed the necessity for the strict quarantine control being observed over the movement of ships and aircraft from the heavily-infested Western Carolines to the Eastern Carolines and Marshall Islands.

Mr. Pieris sees two urgent problems confronting Trust Territory peoples. Domestic food production must be increased, and coconut production stepped up, the latter by fostering present yield or by establishing new plantings. Such questions as the thinning out of overcrowded groves; selection of high yielding mother

palms and seed nuts; nursery management; seedling selection, transplanting and after care; plantation sanitation and the prevention and control of pests and diseases; and copra drying and storage, were discussed in detail both with the administration authorities and the islanders, individually and at group meetings.

In the New Hebrides, Mr. Pieris has been asked to pay particular attention to the question of termite control and the restoration of old or abandoned coconut groves. He will visit typical European plantations and native coconut groves, and inspect possible areas for establishing new plantings.

Cocoa, Coffee: Mr. Urquhart's reports on cocoa growing in Western Samoa (with brief references to American Samoa and the Cook Islands) and in the New Hebrides are being issued as further papers, Nos. 39 and 40, in the Commission's Technical Paper series.

Since publication of Mr. Urquhart's survey of cocoa-growing prospects in the New Hebrides (Technical Paper No. 40), the recently-created Condominium Department of Agriculture, under the direction of Monsieur Gustave Lods, has decided to carry out a practical study of methods for the vegetative propagation of cocoa and the production of rooted cuttings from selected cocoa trees at the new experimental station being established near Port Vila.

A vigorous programme for extending cocoa plantings is under way in Papua and New Guinea, especially on the Gazelle Peninsula in New Britain. The village people are participating actively, and have planted a total of about 500,000 trees under Departmental supervision in the Rabaul area. The Department of Agriculture, Stock and Fisheries registers all groves, each of which must contain a minimum of 500 trees when fully planted. The Vunamami Native Village Council has sponsored and erected a central cocoa fermentary for handling the produce of its area, which has 30,000 to 40,000 trees.

It is felt that the cocoa breeding, selection and research at the Lowlands Agricultural Experimental Station at Keravat, Papua and New Guinea, would be of considerable interest to other territories in the region, particularly Western Samoa and the New Hebrides.

Coffee growing is extending in the highlands of Papua and New Guinea, both for cultivation in village gardens and as a basis of European settlement. With a Sydney price of between £600 and £700 per ton for Arabica coffee, this crop is able to bear the cost of air transport from the interior of Papua and New Guinea to the coast. Considerable village production is also developing in the hinterland of the Finschhafen Sub-District, where an extension officer has just been appointed to assist and regularize processing and marketing. The native coffee project in the Northern Division of Papua was brought to a standstill by the Mount Lamington eruption, but its rehabilitation is to be undertaken as soon as an extension officer becomes available.

Rice: The New Zealand and United Kingdom Governments have approved the proposal for an agreement with the Food and Agriculture Organization covering an investigation of the rice industry and its prospects in the area, and a co-sponsored technical meeting on rice. The Food and Agriculture Organization has already indicated how the South Pacific territories can be included in the scope of the programme of the International Rice Commission.

E.3—Tropical Pasture and Animal Improvement

Improvement of the quality of tropical pasture grasses and stock and promotion of better farming methods.

The suggestions for a regional approach to the grassland problems of the area, submitted by Mr. S. L. Everist, Botanist, Department of Agriculture and Stock, Brisbane, following his visit to New Guinea and Fiji under Commission auspices in December last, are now being examined by the Commission's technical officers in relation to the Commission's future programme in this field, which will be considered at the next Research Council meeting in June. An enquiry was recently received as to possible avenues along which New Zealand territories might be associated with the Commission in the conduct of pasture experiments within the region.

On the subject of animal improvement, attention is directed to the general article on animal production in the South Pacific area with special reference to cattle, the note on the introduction of the Santa Gertrudis breed to Queensland, and the abstracts of recent literature, appearing elsewhere in this issue.

Information on a formula for stock licks embodying mineral supplements was received from New Zealand and passed on to the New Caledonia authorities, in response to their earlier enquiry for information on stock licks of this nature for possible use on the cattle stations of the territory. Their attention was also drawn to United States Department of Agriculture Technical Bulletin No. 981, July, 1949, on *Comparison of Methods of Supplying Phosphorus to Range Cattle* by W. H. Black, L. H. Tash, J. M. Jones and R. J. Kleberg, Jnr.

In Australia the Executive Officer for Economic Development had discussions with Dr. R. B. Kelley at the C.S.I.R.O. McMaster Field Station, Badgery Creek, New South Wales, where he is conducting experimental work on the crossing of Zebu and British breeds.

The Executive Officer for Economic Development and Monsieur Barrau visited cattle stations in New Caledonia in connection with the build-up of the Commission's project.

E.4—Land Use Surveys

Correlation and dissemination of information on land utilization arising from land-use surveys carried out by administrations in the South Pacific.

The Executive Officer for Economic Development and the Deputy Chairman of the Research Council attended the C.S.I.R.O. Conference on Regional Surveys related to Land Classification, from 11th to 13th February. Impressions developed during this visit are embodied in the following notes:—

The first rough classification of land would distinguish areas suitable for agricultural, pastoral and forest use. This type of classification can be made following reconnaissance surveys of the physical environment with special reference to climate and soil which are the main determinant. The assembly of sufficient reliable climatological data and the mapping of the dominant soil types are the first steps.

Aerial photography is of great importance and generally recommended as a necessary first stage.

If existing air photos are on too small a scale it seems possible to enhance their value considerably by taking additional aerial photos of sampling strips at a scale of 1 : 15,000.

As soil classification and soil mapping are based on physical characteristics which are more or less unchangeable, a soil map gives more durable information than a map indicating land capability, because the latter depends upon economic and social factors which are subject to change and development. If questions of soil conservation are to be taken into account, other physical characteristics must be considered such as slope of the land, soil structure, availability of water.

E.6—Economic Development of Coral Atolls

A study of atoll and low island economy with a view to discovering ways of increasing the quantity and variety of subsistence and commercial crops, improving domestic animals and exploiting fisheries and native handcrafts.

Among other documentation on coral atoll problems, the Commission received recently the following reports on the research carried out on Onotoa Atoll, Gilbert Islands, in 1951 by the United States Pacific Science Board, which is being published progressively in the Atoll Research Bulletins of the Pacific Science Board, National Research Council (2101 Constitution Avenue, N.W. Washington 25, D.C., U.S.A.):—

Preliminary Report on Geology and Marine Environments of Onotoa Atoll, Gilbert Islands, by Preston E. Cloud, Jr., 65 pages, including two appendices, 5 tables, 8 figures including two maps and 9 profiles of Onotoa Atoll; *Atoll Research Bulletin* No. 12, December 15, 1952.

Preliminary Report on Marine Biology Study of Onotoa Atoll, Gilbert Islands, by A. H. Banner and J. E. Randall. 62 pages, 1 map; *Atoll Research Bulletin* No. 13, December 15, 1952.

Part I:

(i) Windward reef transect.

(ii) Shallow water lagoon regions and adjacent areas.

(iii) Gilbertese utilization of invertebrates.

By Dr. A. H. Banner.

Part II: Investigations of the Ichthyofauna of Onotoa, Gilbert Islands.

By Mr. John E. Randall.

In 1952 a study of Raroia Atoll, in the Tuamotu Archipelago, was carried out under the coral atoll programme of the Pacific Science Board. This year a team will be sent to Ifaluk, in the Caroline Islands.

E.8—Subsistence of Indigenous Peoples

An assessment of food crop resources and techniques throughout the region and the study and promotion of methods of improving food production and utilization.

An officer will shortly be appointed to work full-time on this project.

E.9—Control of Pests, Diseases and Weeds

Investigation of the pests, diseases and weeds affecting plants and animals likely to spread into or within the area, occurrence, distribution, present methods of control within and exclusion from territories; development of quarantine policy in the area.

That devastating pest of the coconut palm, the rhinoceros beetle (*Oryctes rhinoceros*), which is to be found in the Palau Islands (Trust Territory of the Pacific Islands), New Britain and New Ireland (Papua and New Guinea), Western Samoa, American Samoa, Wallis Islands, and has more recently re-appeared in the Kingdom of Tonga, has continued to receive the special attention of Mr. L. J. Dumbleton, the Commission Plant and Animal Quarantine Officer.

The search for suitable parasites continues. *Scolia ruficornis* collected by the Administration entomologist (Mr. G. S. Dun) during a visit to Zanzibar at the end of last year, have been introduced and liberated in the Rabaul area of Papua and New Guinea. Attempts by the entomologist of the Institut Français d'Océanie, New Caledonia (M. Cohic), to introduce the same parasite into the Wallis Islands have, so far, been defeated by transportation difficulties.

Future work on the problem was discussed at the annual meeting of the Invertebrate Control Consultants Committee in Honolulu in February last, at which Mr. Dumbleton was present. Proposals for a co-ordinated programme of rhinoceros beetle research in relation to the whole of the Pacific Island region as a possible field of Commission activity are now being prepared for reference to the Research Council.

E.14—Industrial Development

A survey of current and projected industrial development in the region.

The International Labour Organization has given valuable guidance on the manner in which this survey should be carried out, and may also provide assistance in its conduct.

In the meantime preliminary work is progressing. Statistics of the external trade of territories in the region are being collated at Commission headquarters, and reference literature is being assembled for the preparation of statements on industrialization experience in comparable tropical regions outside the Pacific. Helpful information relating to various aspects of this project has been received from the United Kingdom Colonial Office, the Caribbean Commission, the Australian Department of National Development and the Industrial Research Advisory Council of Hawaii, as well as from I.L.O.

E.15—Economic Surveys

Assisting territorial administrations to plan, undertake or improve economic surveys and investigations.

Mr. V. D. Stace, who has been made available by the Reserve Bank of New Zealand, will go to Apia in April to commence work on the economic survey of Western Samoa. Before leaving Wellington he will spend some time at the Department of Island Territories, assembling reports and statistical material.

Health

DR. G. LOISON, Research Officer, left Noumea on 13th February for a tour of duty to Fiji, French

Oceania, Western Samoa and American Samoa. Inadequate transport precluded his visiting Rarotonga (Cook Islands). The objects of these visits were:

(1) to discuss the Commission's work programme with the territorial authorities;
(2) to collect information relating to Commission projects on tuberculosis, filariasis, leprosy, and mental health; and
(3) to consider research work being planned or carried out in the territories.

EXECUTION OF PROJECTS

H.1 (a)—Epidemiological Information Service

Relapsing fever (louse borne), included in the list of notifiable diseases (Category A), has appeared in the monthly returns since January, 1953.

Arrangements are under way for the inclusion of Guam and of the Trust Territory of the Pacific Islands in the Epidemiological Information Service.

H.1 (b)—Standard Quarantine Regulations

Standardization of quarantine regulations relating to non-pestilential diseases.

Following consultations between Dr. L. H. Murray, Chief of the International Quarantine Section, World Health Organization, Dr. Loison (in Fiji, 17th February), and Dr. Massal (in Noumea, 21st February), Dr. Massal prepared a memorandum on the present position of this project. This has been distributed preparatory to the second meeting of the *ad hoc* committee on quarantine regulations, to be held at Noumea in June, 1953.

H.2 and 5—Alimentation and Nutrition

Study of infant foods, especially the preparation from local resources of a suitable food for infants during the weaning period. Determination of the nutritive value of island foods and establishment of a nutrition map of the area.

After taking annual leave in Australia, where she contacted several authorities and the personnel of the Social Development Section in Sydney, Miss S. Malcolm, the Commission's nutritionist, returned to headquarters on 12th February. She left the following day for French Oceania, where she is continuing her investigations on both high islands and atolls.

Reports on research carried out by Miss Malcolm in 1952 in New Caledonia and in American Samoa are being prepared for early publication.

The Commission's biochemist, Mr. F. Peters, arrived at headquarters on 18th February. A report on his activities in 1952, and an annotated bibliography on *Nutritional Aspects of the Coconut* are being studied.

Preparations have been made for Mr. Peters to visit certain institutions, where he will acquaint himself with latest techniques for estimating amino-acid content of foodstuffs. These institutions will include the—

(1) Diet and Nutrition Laboratory of the University of Hawaii (Miss Carey D. Miller);
(2) Laboratories of Chemistry and Biochemistry, University of California (San Francisco) and Stanford University;
(3) Laboratory of Biochemistry, University of California, Los Angeles (Dr. Max S. Dunn); and
(4) Laboratory of Biochemistry, Rockefeller Medical Research Institute, New York (Drs. Stanford Moore and William H. Stein).

Mr. Peters will also visit authorities experienced in amino-acid estimations of food in England, France, Rome (Division of Nutrition, Food and Agriculture Organization, Drs. W. R. Aykroyd, A. G. van Voen, and M. Autret) and Manila, in order to establish personal contacts, discuss the South Pacific Commission's programme, and assemble useful information. Visits to research institutions in India, Malaya, Thailand or Singapore are also being arranged.

Mr. Peters' itinerary extends over approximately four months. While he is abroad laboratory facilities will be prepared for him at the French Institute of Oceania, Noumea. On his return, Mr. Peters will concentrate on making quantitative analyses of the amino-acid content of Pacific islands foodstuffs.

H.3—Tuberculosis

It has not been possible to accept an invitation received from Mr. Juan Salcedo Nr., to attend the forthcoming Pan Pacific conference on tuberculosis to be held at Manila. Arrangements have been made with the Government of New Caledonia for Dr. R. F. Franco, Director of the Gaston Bourret Institute of Microbiology, Noumea, who is representing the French Territories in the Pacific, to act as the South Pacific Commission's official observer at the Conference.

H.4—Filariasis and Elephantiasis

Association of various institutes and experts engaged on filariasis and elephantiasis research.

Applications have been invited by 15th May, 1953, for the post of research specialist in mosquito-borne diseases. An appointment will be made as soon as possible thereafter. In the meantime, Mrs. S. Monlau, of New Caledonia, has been appointed temporarily to continue the preparation of the bibliography, and the collection and review of the documentation.

The technical report on the filariasis conference, held under Commission auspices at Tahiti in August, 1951, has been completed. Both English and French editions will be published shortly by the Commission.

A progress report on the action taken with respect to the recommendations made at the Conference is being prepared, and will be circulated soon. The map showing the distribution of mosquito carriers of filariasis in the Pacific requires further work prior to its distribution.

Close contact has been maintained with research workers, institutions, and with the members of the filariasis advisory committee.

H.6—Ophthalmology

Classification of eye diseases in the area. Advice to territorial health services of diagnosis, treatment and control.

All attempts made to appoint an expert to visit the territories which have requested the services of an ophthalmologist (Niue, Western Samoa, American Samoa, the Trust

Territory of the Pacific Islands) have been unsuccessful. The lack of response to inquiries is attributable to the short duration proposed for the appointment. The secondment for a short period of a specialist from the health service of an administration is being sought.

H.7—Leprosy

Study of local conditions affecting leprosy. Advice to territorial health services on a uniform system of diagnosis and control.

Dr. Norman R. Sloan, the Commission's leprologist, planned to finish his survey in the Trust Territory of the Pacific Islands on or about 10th March. After returning to Honolulu to discuss results with the administrative medical authorities of the territory, he will proceed to American Samoa via Fiji.

Dr. Sloan's report on his investigations in Netherlands New Guinea has been sent to the authorities of that territory for their comments and authority for publication.

Dr. D. Leiker of the Netherlands New Guinea Health Service was in Noumea from 20th to 24th January on his way to Makogai, Fiji, where he spent approximately one month, under arrangements made with the Fiji Government for further training of leprosy specialists. On 21st February Dr. Leiker returned to New Caledonia, where he spent a week visiting the Ducos Leprosarium and conferring with local experts before leaving for Netherlands New Guinea.

H.8—Malaria

Research on control of malaria. Advice to territorial administrations on preventative measures.

The distribution of Dr. R. H. Black's reports on his malarial surveys of territories, carried out under Commission auspices, is progressing. The report on the Trobriands has been given a restricted circulation, pending the checking of results of the programme under way. Dr. Black's report on the British Solomon Islands Protectorate is being reproduced. Authority for publishing his report on New Hebrides has yet to be received.

H.10—Yaws

Arrangements are being made to investigate the value of a new penicillin preparation in the treatment of yaws.

New Projects Under Consideration

Preliminary investigations have been carried out into the possibility of including research into dental defects in the nutrition programme. A recommendation will be made at the Research Council meeting next June.

The collection of information relating to mental health (such as statistics, facilities for treatment and regulations in force) has been commenced. It does not appear, however, that complete data will be available from territories in time for discussion at the Research Council meeting.

Social Development

THIS review of activities in the social development field is arranged under four main heads — Education, Social Welfare, Research Services and South Pacific Literature Bureau. However, in order that progress in respect of specific projects might conveniently be noted, an index of them arranged in numerical order will be found at the end of this report.

Mr. H. E. Maude, Executive Officer for Social Development, paid a visit to the New Hebrides from 28th January to 12th February, at the invitation of the Condominium Government. Through the kindness of the Resident Commissioners he was able, in company with M. Guiart, Ethnologist of the Institut Français d'Océanie, to touch at Efate, Santo, Aoba, Pentecost, Malekula, Ambrym and other islands and to meet European and indigenous residents throughout the Group.

Other absences on duty were to Noumea for discussions with the Secretary-General and Dr. F. J. Harlow from 12th - 14th February; to Canberra on 16th February; and to Melbourne, for the Film Festival, on the 8th and 9th March. Mrs. N. Phelan, Assistant Organizer for Island Literature, was also present at the Festival.

A. Education

(1) Community Development

The Moturiki Pilot Project (S.9): Mr. Howard Hayden, Director of Education in Fiji, has completed his final report on the Moturiki Project. It contains detailed accounts of the organization and field work of the project and is illustrated by photographs. It will form one of the series of project reports being published for the Commission by Oxford University Press.

Community Development (depopulated area) Project (S.16): Issue by the Commission of the preliminary report and project plan for community development work on Tabar has been delayed pending discussion with the Senior Commissioner for Australia on possible changes in presentation. In the meantime, field work in the project continues.

The Nimboran Community Development Project (S.17): Further work on the translation of the detailed preliminary report of the Nimboran project was found necessary after it was received from the Netherlands authorities towards the end of 1952. Final clearance of the text is expected shortly.

(2) Mass Literacy

Adviser on Literacy (S.21): Dr. K. Neijs, Adviser on Literacy, continued his preparation for experimental field work. In January he proceeded to Suva, where he spent some weeks working with Mr. Howard Hayden, Director of Education in Fiji, on an analysis of literacy teaching materials and documentation concerning literacy work, preparatory to the publication of the report to be issued under Project S.3. Dr. Neijs returned to Sydney via Noumea, where he held discussions with the French educational authorities. Suggestions for the initial stage of his experimental field work are being considered.

(3) Visual Education

Film and Filmstrip Appraisal Service: Large quantities of filmstrips,

both French and English, have been received in the last month or so for the Film and Filmstrip Appraisal Service. A selection has been made for showing at the Second South Pacific Conference being held at Commission headquarters from 15th to 27th April.

16 mm. films which have arrived at the Bureau since January are: *Village Council* (taken in Hanuabada, Papua), *Killers of the Deep* (deep sea fish), *The Goolibah Tree* (colour puppet film on co-operatives), and *First Days in the Life of a New Guinea Baby* (anthropological documentary made by Margaret Mead and Gregory Bateson). As many Commission films as possible are being sent to Noumea for showing at the South Pacific Conference. Parcels of films continued to go out to approved borrowers in the area for appraisal purposes.

Vernacular Film Commentaries: American Samoa has started an enterprising experiment with films from the Commission library. They are run as silent films, the English commentary being replaced with a vernacular commentary. Enquiries are being made concerning magnetic-optical projectors being manufactured overseas which may be of use in this kind of work.

Daylight Screen: A demonstration of a daylight screen was given at the Literature Bureau recently in the presence of the Organizer for Island Literature, the Executive Officer for Social Development, the Assistant Organizer for Island Literature, the Adviser on Literacy and the Director of Education, Fiji. The screen, an improvement on previous types, costs from £A.14 to £A.21. The Director of Education in Fiji has acquired a model for experimental use.

Filmstrip on Educational Workers in the Pacific Islands: Mr. R. S. Adam, Director of the Educational Research Institute, Fiji, has given the Bureau permission to make copies of his filmstrip *Educational Workers in the Pacific Islands* for distribution in the area. These prints are now available on application to the Executive Officer for Social Development (for cost of print plus postage).

Melbourne Film Festival: At the Second Annual Festival organized by the Australian Federation of Film Societies the Commission, by invitation, presented two programmes of Pacific films. The first of these, consisting of three anthropological films (*Ile de Paques, Kapingamarangi,* and *Popoko, Ile Sauvage*), was introduced by the Executive Officer for Social Development, who spoke on *The Film in the Pacific.* The second, *Moana of the South Seas,* was introduced by the Assistant Organizer for Island Literature. The Pacific Islands film programme was screened twice and *Moana* three times to audiences totalling several thousand people.

General: Requests continue for services and information on visual aids. Enquiries this quarter ranged from requests for assistance in finding photographs for filmstrips, to problems of processing colour film in the tropics.

(4) Vocational Training

Central Vocational Training Institution (S.20): Dr. F. J. Harlow's investigation into the possibility of establishing a prototype central vocational training institution is now complete. During December and January Dr. Harlow worked in Suva on the final section of his report, incorporating detailed estimates of capital cost, land, works and buildings prepared by Mr. C. N. Nettleton, Government Architect for Fiji. Early in February he proceeded to Noumea for final consultations with the Secretary-General and the Executive Officer for Social Development. Dr. Harlow's final report, which includes Mr. Nettleton's draft building plans, has now been issued to member Governments as the basis for their consideration of the establishment of such an institution.

(5) Women's Education

At the Commission's request, the Senior Commissioner for Australia has kindly arranged for the services of the Hon. C. H. Wedgwood to be made available in 1953 for carrying out the documentary survey of existing material relating to the education of women and girls in the South Pacific region. Miss Wedgwood, who is senior lecturer in native education at the Australian School of Pacific Administration, has had long experience of education in Melanesian territories. In 1951 Miss Wedgwood attended, as Pacific area specialist nominated by the Commission, the Paris Unesco Conference on the use of the vernacular in teaching. She has prepared for the Commission a bibliography on native education in the Pacific (to be published shortly).

(6) Educational Evaluation

Ways of carrying out this project are being investigated, including the possibilities of collaboration with Unesco. The outcome of these enquiries will supplement the set of working papers on the subject considered by the Research Council at its meeting last June.

B. Social Welfare

(7) Welfare Centres

The Koror Community Centre: A grant-in-aid has been made to the Trust Territory of the Pacific Islands for the development of a community centre on Koror, in the Palau Group. Dr. H. G. Barnett, then staff anthropologist of the Trust Territory, spent three months on Koror towards the end of 1952, arousing the interest of the Palauans in the establishment of a community club-house, which is expected to form the nucleus of the Centre. Following this initial work, Mr. Arthur K. Powlison, former Director of Recreation for Parks and Playgrounds in Hawaii, was appointed Director of the Centre, and proceeded to Koror. It is expected the Commission will issue the project plan for the Centre shortly.

(8) Population Research

Population Studies (S.18): The study of population decline in the Marind-Anim region of Netherlands New Guinea was commenced in December. Dr. H. J. T. Bijlmer, Director of Health in Netherlands New Guinea, who is supervising the medical side of the investigation, visited the region and held consultations with the two medical officers who are to carry out the detailed medical research work. Dr. S. Kooijman, the socio-anthropologist who is acting as Dr. Bijlmer's colleague by arrangement with the Leiden Museum, of which he is Curator, commenced field work after discussions on the project with Dr. Bijlmer. Missions in the Marind-Anim region are giving valuable help by providing vital statistics.

Demographic Survey: In pursuance of a Commission decision relating to further study of population trends, discussions on the preparation of a project have been held by the Deputy Chairman of the Research Council and the Executive Officers for Economic and Social Development with Mr. W. D. Borrie, Reader in Demography at the Australian National University, and his assistant, Dr. N. R. McArthur. Proposals have been prepared for consideration by the Commission.

(9) Conservation

Archaeological and Historical Conservation (S.10): Further information on legislation to protect archaeological sites has been received from member Governments. Plans are being made for an authority on conservation to draw up model legislation suited to the Pacific, using the material collected as a guide.

The Executive Officer has been kept informed of the work of Miss Dorothy Crozier of the Australian National University on the Western Pacific High Commission archives.

An important historical manuscript has been micro-filmed by the Commission as part of its historical conservation programme, details being given under Section 18 below.

(10) Co-operation

Further requests for assistance in fostering co-operative movements in the territories have been received during the period under review; notably from two territorial administrations in the Melanesian area. As a result of one enquiry a comprehensive selection of literature on co-operation was forwarded for use in the territorial co-operative department. At the request of the British and French Resident Commissioners, a tour of the New Hebrides was made by the Executive Officer and M. J. Guiart of the Institut Français d'Océanie, Noumea. A joint report on the development of the territorial co-operative movement is to be submitted to the Condominium Government.

The Co-operative Movement in Papua and New Guinea, based on material provided by the Registry of Co-operative Societies in the territory, was issued (Technical Paper No. 42) as part of the Commission's co-operative information service. A Pidgin manual of instruction and practical lessons for co-operative storekeepers, prepared for use in Papua and New Guinea, has, with the kind permission of the Australian authorities, been translated into simple English by the Commission and forwarded to the British Solomon Islands Protectorate Administration at their request.

Experiments are being made in the preparation of filmstrips on the co-operative movement in the South Pacific. Material for use in the strips has been obtained from the Fiji Public Relations Office, and on the Nauru co-operative movement from the Senior Commissioner for Australia.

Preparation has begun of background papers on agenda items for the Technical Meeting on Co-operatives, to be convened by the Commission in 1954. Advantage is being taken of the present Pacific tour of Mr. B. J. Surridge, O.B.E., Adviser on Co-operation to the United Kingdom Colonial Office, to discuss plans for the meeting with him. The section has also assisted in arranging Mr. Surridge's itinerary, which includes visits to Papua and New Guinea, the British Solomon Islands Protectorate, Australia and Fiji.

(11) Housing

Colonial Building Notes No. 9 on Hurricanes: Details of Building Construction, being extracts from a report on the 1952 hurricane in Fiji by the Government Architect for Fiji, was kindly supplied by the Colonial Liaison Officer of the United Kingdom Building Research Station, in sufficient numbers for circulation to territorial administrations. Further copies are available on request from the Executive Officer for Social Development.

(12) Linguistics

The Preparation of Vernacular Bibliographies (S.15): The Cook Islands Maori bibliography compiled by the Rev. H. Bond James is nearing completion. Libraries specializing in collecting vernacular material continue to supply entries for it and for the Nauruan and Gilbertese dictionaries.

Through the courtesy of the Most Rev. Monsignor Jules Halbert, Vicar Apostolic of the New Hebrides, manuscripts, dictionaries and grammars of New Hebrides languages have been forwarded to the Commission for copying. Deposit Notices concerning them will appear in the *Quarterly Bulletin.*

C. Research Services

The provision of research services to Governments and other organizations connected with the area continues to form by far the greater part of the work of the section. Requests have now increased to the extent that it is becoming difficult to deal with all in the detail one would wish. References to existing material on a given subject are therefore being sent in lieu of assembled information whenever possible, except when it is known that library services are not available.

(13) Co-ordination of Research Activities

Technical assistance to Government officials and research workers in the region has continued, in particular by the supplying of literature on various research matters. Among recent examples may be cited the provision of information on anthropological and linguistic field work in New Guinea, and of details of local education regulations for a territorial department.

Information has been collected on recent or current social science field research under way in the Commission area for issue as a Technical Paper.

(14) Circulation of Technical Publications

Among the technical publications obtained during the quarter for distribution, in addition to issues of serial publications regularly included in this service such as *Community Development Bulletin, South Pacific, Pacific Islands Education,* etc., were:—

No. 99. *Workers' Housing Problems in Non-Metropolitan Territories.* Geneva, I.L.O. Committee on information from Non-self-governing Territories, Third Session, 1952;

No. 107. *Expansion of Local Government in Fiji,* by K. H. Henderson, Suva, Government Printer, November, 1952; and

No. 115. *Hurricanes: Details of Building Construction.* From a report on the 1952 hurricane in Fiji by C. N. Nettleton, Government Architect, Fiji, Watford, U.K., Building Research Station. (Colonial Building Notes No. 9.)

Copies of any of these publications, and of technical periodicals relating to social development such as those cited above, are obtainable on request from the Executive Officer for Social Development.

(15) Circulation of Technical Information

Two new papers and one reprint in the Social Development field were issued in the Technical Paper series during the quarter.

The new numbers are:—

Technical Paper No. 41: *Social Problems of Non-Maori Polynesians in New Zealand,* by Rev. R. L. Challis. (Social Development Notes No. 13); and

Technical Paper No. 42: *The Co-operative Movement in Papua and New Guinea,* prepared by the Registry of Co-operative Societies, Port Moresby. (Social Development Notes No. 14.)

In response to the wide territorial demand for copies of the Platten Report on Project S.13, originally prepared for Unesco, it is being re-issued as:—

Technical Paper No. 43: *The Use of the Vernacular as a Medium of Instruction,* by G. J. Platten.

(16) Requests for Information or Advice

Sixty-seven requests for information or advice were received from administrations and public bodies during the quarter. A few examples are:—

(i) From the Massachusetts Institute of Technology, for information on prefabricated housing construction in the Pacific area;

(ii) from the Education Section of United Nations, for materials for use in the preparation of a booklet for use in trust territory schools;

(iii) from the Co-operative Officer, British Solomon Islands Protectorate, for material on co-operation;

(iv) from the Presbyterian Mission Teachers' Training Institution, Tangoa, for information concerning village library books; and

(v) from the Government of Netherlands New Guinea, for documentation on welfare centre work in the South Pacific.

(17) Publication of Research Work

Negotiations have continued with various publishing houses for the publication, with Commission subsidy if necessary, of several books on social development topics in the Pacific.

(18) Preservation of Manuscripts

This service was extended at the Tenth Session to include the copying of manuscripts of historical and scientific importance as well as those of purely linguistic significance. A number of manuscripts has been dealt with during the period under review. Examples are a thesis by the Rev. Dr. A. C. Cato, *Native Education in Fiji, Tonga and Western Samoa,* and a study by the late Professor G. C. Henderson, *The History of Government in Fiji, 1760-1865.* Deposit notices concerning these manuscripts appear elsewhere in this issue.

(19) Topical Working Bibliographies

The *Bibliography of Cargo Cults and other Nativistic Movements in the South Pacific* has appeared as Technical Paper No. 30.

Many helpful suggestions have been received from educationists to whom the Hon. C. H. Wedgwood's *Bibliography of Native Education in the South Pacific* was sent for comment. The final draft is now being prepared.

D. South Pacific Literature Bureau

Publications Programme: During the quarter just completed, preliminary discussion and correspondence was entered into concerning the possibility of publication of twenty-three different booklets for Western Samoa, Fiji, Netherlands New Guinea, Papua and New Guinea, the New Hebrides, the United States Trust Territory of the Pacific Islands, or the Pacific as a whole. Several definite offers were made to assist with the publishing of manuscripts on behalf of various island administrations, and a number of specimen illustrations showing what is possible were sent out. Estimates of costs of other publications were prepared and sent out at the request of individual administrations.

Support from Publishers: Direct discussions or correspondence with executives of leading world publishing houses indicated that their fullest support would be extended in the work of developing literature facilities in the Pacific.

Pacific Reading: The second number of *Pacific Reading,* the quarterly paper of the Literature Bureau, was issued at the end of March. This paper has been widely welcomed by readers, publishers and booksellers.

Pacific Christian Literature Society: Co-operation is being developed with the Pacific Christian Literature Society in the production of simple, sound secular literature for the islands. The translation or adaptation of several small books is now being considered by the Society with the assistance of various missionaries living in the islands.

General Activities: In the course of a visit made to Netherlands New Guinea during December of last year the Organizer for Island Literature received twenty-two requests for information, advice or assistance which required further enquiry and follow-up work. During the present quarter substantial progress has been made in fifteen of these. The requests included information about books, charts and posters on a number of different subjects; the possibility of the production of certain wall maps for use in schools; information on various points about language teaching methods and policies in multi-language societies; information about various printing and reproduction techniques; and co-operation in the production of simple books for use in New Guinea.

SOCIAL DEVELOPMENT SECTION

Quarterly Reading List No. 7

This seventh Quarterly Reading List departs slightly from the coverage given in previous issues. In the past, only items actually examined by the Social Development section staff have been included, and this naturally had the effect of limiting the number of entries noted.

Commencing with this issue an attempt is being made to list every item to appear in the field, whether examined or not; bibliographies, publishers' notices, reports and the like being used as additional sources for entries. While it is clearly impossible to check for errors which may occur in these (e.g., in the classification used in the original sources or in the entries themselves), it is felt that this danger is outweighed by the almost complete coverage given by the new method of compilation. Unsighted items are, however, indicated by an asterisk at the end of the entry.

The Executive Officer for Social Development, Box 5254, G.P.O., Sydney, will be glad to obtain for any metropolitan or territorial Government copies of any items listed, even though the original material may not be available in Sydney.

GENERAL

Anthropology

(1) Solheim, W. G.: Oceanian pottery manufacture. *Journal of East Asiatic Studies* 1 : 2, 1952; p. 1-39.*

(2) Südseestudien: Gedenkschrift zur Erinnerung an Felix Speiser. Bâle, Museum für Völkerkunde, 1951. viii, 423 p., illus.*

Art

(3) Perruchot, H.: Gauguin et le Pacifique. *Réalités.* November, 1951; p. 84-92, illus.*

(4) Rousseau, M., *and others*: L'art océanien: sa présence. Paris, 1951; 118 p., illus. (Collection: le Musée vivant, No. 38.)*

Bibliography

(5) O'Reilly, P.: Bibliography de l'Océanie, 1951. *Journal de la Société des Océanistes* 8 : 8 Dec., '52; p. 329-361.
A most comprehensive bibliography covering such topics as geography, history, anthropology, linguistics, missions, government and administration, economics, literature.

Biography

(6) Le Bienheureux Pierre Chanel, premier martyr de l'Océanie, 1803-1841. *Missions des Iles* No. 34, 1951; p. 33-65, illus., maps.*

(7) Howard, L.: Herman Melville, A Biography. Berkeley, University of California Press, 1951; 364 p., illus.*

(8) Leyda, J.: The Melville Log: A Documentary Life of Herman Melville, 1819-1891. New York, Harcourt Brace, 1951; 2 vols., illus.*

Description

(9) Bernatzik, H. A.: Canaques et Papous (Sudsee). Paris, éditions Self, 1952; 250 p., maps, illus. (Translated from the German by Henry Daussy.)*

(10) Carpenter, F.: The Pacific: Its Lands and Peoples. New York, American Book Coy., 1951; 502 p., illus.*

Geography

(11) Faivre, J-P. Freeman, O. W. (ed.): Geography of the Pacific. New York, Wiley, 1951. *A Review. Journal de la Société des Océanistes* 8 : 8 Dec., '52; p. 316-318.

History

(12) Harvey, N. C.: Whale Hunt: A Narrative of a Voyage by Nelson Cole Harvey, Harpooner in the Ship "Charles W. Morgan". London, Hale, 1952.*
Whaling in the Pacific during the early 1850's.

(13) Rydell, R. A.: Cape Horn to the Pacific: The Rise and Decline of an Ocean Highway. Berkeley and Los Angeles, University of California Press, 1952; ix, 213 p., bibl.*
Maritime and commercial enterprises along the west coasts of North and South America and among the central and eastern Pacific islands from the time of Magellan to the opening of the Panama Canal.

(14) Waters, S. D.: Union Line: A Short History of the Union Steam Ship Company of New Zealand Ltd., 1875-1951. Privately printed for the Company by Coulls Somerville Wilkie Ltd., Wellington, 1952; 148 p., illus., maps.

Missions

(15) Chazel, P.: Grandeurs et servitudes missionaires en Océanie. *Le Monde non chrétien* No. 20 : Nov.-Dec., '51; p. 482-491.*

Voyages

(16) Anthoniez, P.: Une nouvelle expédition "Kon Tiki": de Bikini aux Hébrides à bord d'un voilier perdu en mer. *Journal de la Société des Océanistes* 8 : 8 Dec., '52; p. 295-298.

SOUTH PACIFIC COMMISSION

(17) Ford, E.: Fish Resources of the South Pacific. *New Commonwealth* 24 : 10 November 10th, '52; p. 482-3, illus.
Fisheries Conference of the South Pacific Commission.

(18) Maude, H. E.: The Work of the Social Development Section of the South Pacific Commission. In Royal Society of New Zealand. Report of the Seventh Science Congress, Christchurch, May 15-21, 1951. Christchurch, The Society, 1953; p. 182-185.

MELANESIA

Anthropology

(19) Bodrogi, T.: Colonization and Religious Movements in Melanesia. *Acta Ethnographica* (Academiae Scientiarum Hungariae) 11 : 1-4, '51; p. 259-292.

Folklore

(20) Guerre, P.: Archipel Mélanésien. *Via Botteghe Oscure* (Rome) No. : 1952; p. 89-105.*
A collection of Melanesian songs and poems with an introduction by the editor.

Linguistics

(21) Handricourt, A. G.: Variations parallèles en mélanésien. *Bulletin de la Société de Linguistique de Paris* 47 : 134, 1951; p. 140-153, diagrams.*

POLYNESIA

Anthropology

(22) Heyerdahl, T.: American Indians in the Pacific. London, Allen and Unwin, 1952; 820 p., illus.
Detailed statement of Heyerdahl's theory of the origin of the Polynesians.

(23) Heyerdahl, T.: Kon-Tiki's Ancestors. *Geographical Magazine* 25 : 8 Dec., '52; p. 421-426, map, illus.
Evidence regarding the construction and navigation of ancient Peruvian balsa rafts, used for voyaging to Polynesia.

(24) Lindsay, H. A.: The Kon-Tiki Mare's-Nest. *The Bulletin* (Australia) 74 : 3809, 11th Feb., '53; p. 4.

(25) Poirier, J.: L'élément blond dans l'ethnie polynésienne. *Journal de la Société des Océanistes* 8 : 8 Dec., '52; p. 81-116.

Biography

(26) Aimès, P.: Eugène Caillot: voyageur et historien de la Palynésie (1866-1938). *Journal de la Société des Océanistes* 8 : 8 Dec., '52; p. 290-294, bibl.

AMERICAN SAMOA

Anthropology

(27) Schwehr, L.: L'orateur Samoan. *Journal de la Société des Océanistes* 8 : 8 Dec., '52; p. 117-136.

Biography

(28) Furnas, J. C.: The Road of the Loving Heart: Robert Louis Stevenson in Samoa. *Atlantic* Vol. 88 : Sept., '51; p. 33-44.*

Medicine

(29) Williams, B.: They Still Believe in "Bush Medicine". *Pacific Discovery* 5 : 5 Sept.-Oct., '52; p. 12-14, illus.
Native medicine in American Samoa.

BRITISH SOLOMON ISLANDS

Folklore

(30) Montauban, P., and O'Reilly, P.: Mythes de Buka, Iles Salomon. *Journal de la Société des Océanistes* 8 : 8 Dec., '52; p. 27-80, illus.

History

(31) Gschaedler, A.: The Discovery of Gualdalcanal. *Pacific Discovery* 5 : 5 Sept.-Oct., '52; p. 24-27, illus.
The Spaniards and Gualdalcanal.

Land Tenure

(32) Great Britain — Colonial Office: An Annotated Bibliography on Land Tenure in the British and British Protected Territories in South East Asia and the Pacific. London, H.M.S.O. for the Colonial Office, 1952; 164 p. *Mimeographed.*
Contains references to statutory and legal sources, legislative proceedings and debates, official statements and investigations, and general works on the subject, available in the United Kingdom. The most comprehensive bibliography in this field yet published for these territories.

COOK ISLANDS

Agriculture

(33) Baker, M. B.: Citrus Growing in the Cook Islands. *New Zealand Science Review* 11 : 12 Dec., '52; p. 185-187.
Abridgement of article appearing in *S.P.C. Bulletin,* July, 1952.

(34) Johnston, W. B.: Some Aspects of Land Use on Rarotonga, Cook Islands. In Royal Society of New Zealand. Report of the Seventh Science Congress, Christchurch, May 15-21, 1951. Christchurch, The Society, 1953; p. 161-162.

EASTER ISLAND

Description

(35) Luke, H.: A Visit to Easter Island. *Geographical Magazine* 25 : 6 Oct., '52; p. 298-306, illus., map.

FIJI

Anthropology

(36) Gifford, E. W.: Tribes of Viti Levu and Their Origin Places. *University of California Anthropological Records* 13 : 5, 1952.*

(37) Work, T. H.: Fijian Village Life. *Geographical Magazine* 25 : 6 Oct., '52; p. 271-282, illus., map.

Community Development

(38) Hayden, H.: Moturiki: Community Development on a South Sea Island. *Corona* 5 : 1 January, '53; p. 26-31.

Co-operation and Co-operatives

(39) Fiji: Co-operative Development. *Co-operative Information* No. 11, 1952; p. 3-4.

Land Tenure

(40) Campbell, E. M. J.: Land and Population Problems in Fiji. *Geographical Journal* 118 : 4 Dec., '52; p. 475-484, illus., map.

(41) Great Britain — Colonial Office: An Annotated Bibliography on Land Tenure in the British and British Protected Territories in South East Asia and the Pacific. London, H.M.S.O. for the Colonial Office, 1952; 164 p. *Mimeographed.*
Contains references to statutory and legal sources, legislative proceedings and debates, official statements and investigations, and general works on the subject, available in the United Kingdom. The most comprehensive bibliography in this field yet published for these territories.

Linguistics

(42) Fijian as Spoken. Suva, Marist Brothers, 1951; 144 p.*

FRENCH OCEANIA

Description

(43) Atéa, J. P.: Sous le vent de Tahiti. Paris, F. Chambriand, 1951; vi, 183 p., illus., map. (Regards sur le monde, No. 3.)*

(44) Chegaray, J.: Ma Polynésie de goélette en pirogue. Paris, Amiot-Dumont, 1952; 259 p., illus.*

(45) Guild, C.: Rainbow in Tahiti. London, Hammond, 1951; 224 p.*

(46) Henderson, R. C.: Romantic Tahiti. *Pacific Discovery* 5 : 5 Sept.-Oct.; '52; p. 5-11, illus.

(47) Villaret, B.: Piti-u-Taï: mon île déserte du Pacifique. Six mois de chasse sous marine parmi les poissons du coraux. Paris, Amiot-Dumont, 1952; 227 p., illus.*

Directories

(48) Covit, B.: Official Directory and Guide Book for Tahiti. Tahiti, Syndicat d'Initiative, 1951; 136 p., map.

Fishing and Fisheries

(49) L'industrie du poisson. *Chroniques d'Outre Mer: études et informations* Nos. 8-9, Aug.-Sept., '52; p. 54-55, illus.
Fishing in the territory.

Geography

(50) Mission de l'Institut Géographique National à Tahiti. *Chroniques d'Outre Mer: études et informations* Nos. 8-9, Aug.-Sept., '52; p. 13-15.
The 1950 expedition to Tahiti and its work.

History

(51) Bouge, L. J.: Première législation tahitienne: le Code Pomaré de 1819: historique et traduction. *Journal de la Société des Océanistes* 8 : 8 Dec., '52; p. 5-26.

(52) Henry, Teuira: Tahiti aux temps anciens. Paris, La Société des Océanistes, 1951; 671 p. (Translated from the English by Bertrand Jaunez.)*

(53) O'Reilly, P.: Etienne Touze (1871-1951) et l'origine de la Société des Phosphates de Makatéa. *Journal de la Société des Océanistes* 8 : 8 Dec., '52; p. 277-281.

GILBERT AND ELLICE ISLANDS

Description

(54) Cartland, B. C.: A Leap into the Blue. *Corona* 4 : 12 Dec., '52; p. 466-9.
Experiences of a Chief Lands Commissioner in the Colony.

Government and Administration

(55) Burrows, W.: The Old Laws of Tarawa. *Corona* 4 : 9 Sept., '52; p. 352-355.

Land Tenure

(56) Great Britain — Colonial Office: An Annotated Bibliography on Land Tenure in the British and British Protected Territories in South East Asia and the Pacific. London, H.M.S.O. for the Colonial Office, 1952; 164 p. *Mimeographed.*
Contains references to statutory and legal sources, legislative proceedings and debates, official statements and investigations, and general works on the subject, available in the United Kingdom. The most comprehensive bibliography in this field yet published for these territories.

GUAM

Archaeology

(57) Reed, E. K.: General Report on Archaeology and History of Guam. Washington, National Park Service, Department of the Interior, 1952; vi, 133 p., illus., maps.
Reviews the ecology and cultural history of the Marianas and historical and archaeological data relating to Guam, on the basis of which, recommendations are made regarding the conservation and interpretation of sites in these areas.

Description

(58) Morgan, E.: So You Want to Go to Guam. New York, Vantage Press, 1951; 140 p.*

Government and Administration

(59) Public Administration Service: The Organization of the Government of Guam: A Survey Report. (By H. A. Olson and E. F. Ricketts, both of the Staff of Public Administration Service). Chicago, 1951; 67 p.*

(60) Public Administration Service, Chicago: The Structures and Administration of Revenues of the Government of Guam (by H. C. Reeves, assisted by T. P. Rogers). Chicago, 1951; 108 p.*

(61) Tansill, W. R.: Guam and Its Administration. Washington, 1951; 140 p. (Public Affairs Bulletin No. 95.)*

History

(62) Pomeroy, E. S.: Pacific Outpost: American Strategy in Guam and Micronesia. Stanford, Stanford University Press, 1951; xx, 198 p., bibl., map.*
An historical account of American interest and activity in this area.

(63) Thompson, W.: The Guam Story. *United States Naval Institute Proceedings,* Vol. 77, April, 1951; p. 378-385, illus.*

NETHERLANDS NEW GUINEA

Anthropology

(64) Feuilletau de Bruyn, W. K. H.: Ethnografisch verslag over de "Tori Aikwakai" van de meervlake. *Tijdschrift "Nieuw-Guinea"* (I) 13 : 2 July, '52; p. 61-66; (II) 13 : 3 Sept., 52, p. 81-89; (III) 13 : 4 Nov., '52, p. 144-153.

Bibliography

(65) Bibliografie van Nieuw-Guinea. *Tijdschrift "Nieuw-Guinea"* 13 : 4 November, '52; p. 159-160.

Development and Welfare

(66) Het rapport inzake Nieuw-Guinea over het jaar 1950 uitgebracht aan de Verenigde Naties ingevolge art. 73c van het handvest (met opmerkingen van de redactie). Hoofdstuk IV. Economische Toestand. *Tijdschrift "Nieuw-Guinea"* 13 : 4 November, '52; p. 121-126.

(67) Leslie-Miller, J. W.: Het economisch aspect van het Nieuw Guinea—probleem. Proefschrift van de Rijks-universiteit te Utrecht. Druk, Excelsiors Foto-Offset, The Hague, 1952; 79 p.*

(68) Leslie-Miller, J. W.: Het economisch aspect van het Nieuw-Guinea—probleem. Proefschrift van de Rijks-universiteit te Utrecht. Druk, Excelsiors Foto-Offset, The Hague, 1952. A review by W. K. H. Feuilletau de Bruyn. *Tijdschrift "Nieuw-Guinea"* 13 : 4 November, '52; p. 127-132.

Linguistics

(69) Cowan, H. K. J.: De Austronesisch—Papoea'se taalgrens in de onderafdeling Hollandia (Nieuw-Guinea). *Tijdschrift "Nieuw-Guinea"* 13 : 4 November, '52; p. 133-143, map.

(70) Watkins, M. H.: Review: J. H. M. C. Boelaars's "The Linguistic Position of Southwest New Guinea." *Language* 27 : 4 1951; p. 602-606.

Missions

(71) Verschueren, J.: Neu-Guinea, dein Name ist Wildnis. Hiltrup, (Westphalia) Verlag des Herz-Jesu Missionhauses Hiltrup, 1951; 100 p., illus., maps.*

NEW CALEDONIA

Anthropology

(72) Métais, E.: Hypothèse sur l'origine de la hache-ostensoir néo-caledonienne. *Journal de la Société des Océanistes* 8 : 8 Dec., '52; p. 137-148, bibl.

Description

(73) Bastian, G.: Nouméa. *Les cahiers d'Outre Mer* 4 : 16 Oct.-Dec., '51; p. 325-341, illus., maps.*

Missions

(74) Dollfus, R.: Enquête sur la Mission de Nouvelle-Calédonie. *Journal des Missions Evangéliques,* 1951; p. 312-322.*

NEW HEBRIDES

Anthropology

(75) Guiart, J.: L'organisation sociale et politique du Nord-Malekula. *Journal de la Société des Océanistes* 8 : 8 Dec., '52; p. 149-259, illus., bibl.

Art

(76) O'Reilly, P.: Nouvelles-Hébrides: Mallicolo—Sculpture de faîtage en racine de fougère. *Journal de la Société des Océanistes* 8 : 8 Dec., '52; p. 289-290, illus.

Description

(77) Chadeau, A. L.: Les populations des Nouvelles-Hébrides. *Le Monde non chrétien,* No. 19, July-Sept., '51; p. 284-303.*

Government and Administration

(78) Note documentaire sur les Nouvelles-Hébrides. Port-Vila, 1951; 99 p., tables. *Mimeographed.**

Land Tenure

(79) Great Britain — Colonial Office: An Annotated Bibliography on Land Tenure in the British and British Protected Territories in South East Asia and the Pacific. London, H.M.S.O. for the Colonial Office, 1952; 164 p. *Mimeographed.*
Contains references to statutory and legal sources, legislative proceedings and debates, official statements and investigations, and general works on the subject, available in the United Kingdom. The most comprehensive bibliography in this field yet published for these territories.

Missions

(80) Leenhardt, M.: L'experience hébridaise. *Le Monde non chrétien,* No. 19, July-Sept., '51; p. 304-315.*

PAPUA AND NEW GUINEA

Anthropology

(81) Belshaw, C. S.: Revaluation of Time in a Papuan Community. *South Pacific* 6 : 8 November, '52; p. 466-472.
The ways in which new values have been expressed in an altered use of time by the people of Hanuabada as they became absorbed into urban life.

(82) Benedict, R.: Aspects de la culture de Dobu. *In* Enchantillons de la civilisation. Paris, Gallimard, 1950; p. 149-194.*

(83) Gerstner, A.: Der geisterglaube im Wewäk — Boikin — Gebiet Nordost — Neuguineas. *Anthropos* 47 : 5-6 Sept.-Dec., '52; p. 795-821, illus., map.

(84) Head Hunting in New Guinea. *American Anthropologist* 54 : 4 Oct.-Dec., '52; p. 576-577.
Correspondence between S. W. Reed and J. M. van der Kroef concerning the latter's article on this subject in the April-June, 1952, issue of the *American Anthropologist.*

(85) Hogbin, H. I.: Sorcery and Succession in Wogeo. *Oceania* 23 : 2 Dec., '52; p. 133-136.

(86) Laumann, K.: Vlísso, der Kriegs and Jagdgott am unteren Yuat River, Neuguinea. *Anthropos* 47 : 5-6 Sept.-Dec., '52; p. 897-908, map, illus.

(87) Maahs, A. M.: New Guinea's Stone-Axe Men. *Walkabout* 19 : 2 Feb., '53; p. 29-35, illus., map.

(88) Takenaka, N.: Mana and Soul-Substance, with Special Reference to New Guinea. *Japanese Journal of Ethnology* 14 : 4 1949; p. 43-48.*

Bibliography

(89) Bibliografie van Nieuw-Guinea. *Tijdschrift "Nieuw-Guinea"* 13 : 4 November, '52; p. 159-160.

Cargo Cults and Other Nativistic Movements

(90) Berndt, R. M.: A Cargo Movement in the Eastern Central Highlands of New Guinea. *Oceania* (1) 23 : 1 Sept., '52, p. 40-65; (2) 23 : 2 Dec., '52, p. 137-158.

Development and Welfare

(91) Australisch Nieuws. *Tijdschrift "Nieuw-Guinea"* 13 : 4 November, '52; p. 154-159.
Economic development, land policy, etc., in the territory.

(92) Brodie, L.: Adventurous Development in New Guinea. *Colonial Development* No. 12, Winter, '52; p. 18-19, illus.

Education

(93) The Maprik Area Education Centre. *South Pacific* 6 : 8, November, '52; p. 478-491.

Activities of the Centre. Prepared by Mr. R. Thomson, Dept. of Education, Papua and New Guinea, from notes by Mr. J. Neve, Officer in Charge of the Centre.

History

(94) Faivre, J. P., Gordon, D. G.: The Australian Frontier in New Guinea, 1870-1885. New York, Columbia University Press, 1951: *A Review. Journal de la Société des Océanistes* 8 : 8 Dec., '52; p. 318-320.

Missions

(95) Dupeyrat, A.: Le sanglier de Kouni: Père Chabot, missionaire en Papouasie. Issoudun, Dillen, 1951; 211 p., illus., maps.

PITCAIRN

Land Tenure

(96) Great Britain — Colonial Office: An Annotated Bibliography on Land Tenure in the British and British Protected Territories in South East Asia and the Pacific. London, H.M.S.O. for the Colonial Office, 1952. 164 p. *Mimeographed.*
Containing references to Statutory and legal sources, legislative proceedings and debates, official statements and investigations, and general works on the subject, available in the United Kingdom. The most comprehensive bibliography in this field yet published for these territories.

TRUST TERRITORY OF THE PACIFIC ISLANDS

Anthropology

(97) Hines, N. O.: The Secret of the Marshallese Sticks. *Pacific Discovery* 5 : 5 Sept.-Oct., '52; p. 18-23, illus.
Marshallese method of navigation.

(98) Hunt, E. E.: Physique, Social Class and Crime Among the Yap Islanders. *American Journal of Physical Anthropology* 9 : 2 1951; p. 241-242.

(99) Murrill, R. I.: Vital Statistics of Ponape Island, Eastern Carolines. *American Journal of Physical Anthropology,* Vol. 8, June, 1950; p. 185-194.

(100) Riesenberg, S. H., and Gayton, A. H.: Caroline Island Belt Weaving. *Southwestern Journal of Anthropology* 8 : 3 Autumn, '52; p. 342-375, map, illus., bibl.

(101) Spiro, M. E.: Ghosts, Ifaluk and Teleological Functionalism. *American Anthropologist* 54 : 4 Oct.-Dec., '52; p. 497-503, bibl.

(102) Spoehr, A.: Anthropology and the Trust Territory: A Summary of Recent Researches. *Clearinghouse Bulletin of Research in Human Organisation* 1 : 2, 1951; p. 1-3.

Archaeology

(103) Reed, E. K.: General Report on Archaeology and History of Guam. Washington, National Park Service, Dept. of the Interior, 1952; vi, 133 p., illus., maps.
Reviews the ecology and cultural history of the Marianas and historical and archaeological data relating to Guam, on the basis of which, recommendations are made regarding the conservation and interpretation of sites in these areas.

Education

(104) Taylor, J. L.: Pacific Island Adaptation of American Public Schools. *School and Society,* Vol. 73, May 12, 1951; p. 292-294, bibl.

Folklore

(105) Davenport, W. H.: Fourteen Marshallese Riddles. *Journal of American Folklore* 65 : 257, 1952; p. 265-267.

Government and Administration

(106) Sayre, F. B.: Trust Territories' Progress toward Self-Government. *U.S. Department of State Bulletin,* Vol. 25, 1951; p. 1024-1027.

WESTERN SAMOA

Agriculture

(107) Johnston, W. B.: Pacific Island Agriculture: The Contemporary Position in Western Samoa and Some Wider Implications. *Economic Geography* 29 : 1 January, '53; p. 26-38, illus., map, diags.

Anthropology

(108) Schwehr, L.: L'orateur Samoan. *Journal de la Société des Océanistes* 8 : 8 Dec., '52; p. 117-136.

FILM AND FILMSTRIP APPRAISAL SERVICE: Additions to 16 m.m. Film Library

THE South Pacific Literature Bureau maintains a film and filmstrip appraisal service for the benefit of metropolitan and territorial government departments and non-governmental organizations of a public or quasi-public character. Films and filmstrips are sent out on free loan, subject to certain conditions, of which the most important from the Bureau's point of view is the completion by borrowers of appraisal forms. These appraisals supply information on the suitability of films for different areas, and act as a guide in the choosing of new titles. Both films and filmstrips are reviewed regularly in *Pacific Reading.*

The first catalogue was issued in August, 1952. Section 1 lists 16 mm. films with brief description, running time, source, whether black and white or colour, silent or sound. Section 2 gives titles of filmstrips, both French and English. Names of series and of producers were also given.

A revised edition of the catalogue will be issued shortly. In the meantime, titles added to the library since August, 1952, are given below, together with relevant details. Those marked with an asterisk have been ordered but not received at time of going to press.

*ANIMALS OF THE SEA SHORE
Simple biology. French commentary. 10 min. B. & W. Sd. Gaumont British Instructional.

*COMMUNITY DEVELOPMENT AHOADA DIVISION
Improvement in roads, water supply, buildings, etc. 25 min. B. & W. Sd. Colonial Film Unit.

*COPRA
The copra industry in Zanzibar. (Made to encourage the building of drying kilns.) 15 min. B. & W. Sd. Colonial Film Unit.

*DAYBREAK IN UDI
Community development in Udi Division, Nigeria. 40 min. B. & W. Sd. Central Office of Information.

*FIGHT T.B. IN THE HOME
Health measures to prevent tuberculosis. 20 min. B. & W. Sd. Colonial Film Unit.

FIRST DAYS IN THE LIFE OF A NEW GUINEA BABY
Anthropological documentary made by Margaret Mead and Gregory Bateson. 20 min. B. & W. Sd. New York University Film Library.

FOR THE CHILDREN'S SAKE
Documentary on child welfare in New Guinea. 10 min. B. & W. Si. J. Jeffrey, Port Moresby.

*HUSBANDS AND WIVES
Adult education in Africa. 10 min. Col. Si. Central African Film Unit.

KILLERS OF THE DEEP
Documentary on deep sea fish—octopi, moray eels, etc. 10 min. B. & W. Sd. Cornell Film Co.

*LUSAKA CALLING
Saucepan-Special Radio. 20 min. Col. Sd. Central African Film Unit.

*MEN OF ROCHDALE
Story of the early struggles of the pioneers of the co-operative movement. 40 min. B. & W. Sd. Co-operative Wholesale Society, Manchester.

*MEN WHO FISH
Documentary on Japanese fishing co-operatives. 20 min. B. & W. Sd. U.S. Army.

NEW GOLDEN HIND SAILS NORTH
Documentary showing scenes on Raoul and Niue Islands. 10 mins. B. & W. Sd. New Zealand National Film Unit.

*NYONO GETS A LETTER
Importance of literacy. 10 min. Col. Si. Central African Film Unit.

PACIFIC CRUISE
New Zealand naval cruise in Cook Islands, Tokalau Islands and Western Samoa. 20 min. B. & W. Sd. New Zealand National Film Unit.

*POLLINATION
Simple botany film. French commentary. 10 min. B. & W. Sd. Gaumont British Instructional.

*SALT WATER FROM WONDERLAND
Marine life in coral reefs. 10 min. Col. Sd. Sterling Films Inc.

TAKORE TE NAMU
Anti-mosquito measures. Cook Islands commentary. 5 min. B. & W. Sd. New Zealand National Film Unit.

THE COOLIBAH TREE
Puppet film on co-operatives. 20 min. Col. Sd. Co-operative League of America.

*THE MOSQUITO
Life of the mosquito, its breeding places and dangers. 10 min. B. & W. Sd. Encyclopaedia Britannica Films.

*TREE OF WEALTH
Documentary on the coconut and its uses. 12 min. B. & W. Sd. Central Office of Information.

VILLAGE COUNCIL
Documentary on village improvement in New Guinea. 10 min. B. & W. Si. J. Jeffrey, Port Moresby.

*WIVES OF NENDI
Village improvement in Africa. 20 min. Col. Sd. Central African Film Unit.

*YAWS
Treatment of yaws in scattered populations. 10 min. B. & W. Sd. Colonial Film Unit.

The Second South Pacific Conference

(Continued from page 4)

would only be improved if the women were taught in their homes.

"It is no use asking the women to grow better food if we do not teach them how to cook it in better and cleaner ways," Miss Sisa said.

Health Education

Health education was considered on a paper presented by the Netherlands New Guinea delegation. This paper urged, as a great need, education and propaganda that would persuade the people to join with administrators, village officials and chiefs, medical officers and teachers in furthering measures for the prevention of disease.

Delegates from Australian New Guinea and Papua developed this theme by urging the greatest use of visual aids in health education.

"We need educational aids that will both amuse and instruct," one New Guinea delegate said. "Colour and humour are part of the peoples' lives, and should be used to the full in health education."

An indication of the practical help that is being given by one Pacific territory to another was contained in facts given about medical and nursing services in Papua and New Guinea.

Since the war five New Guinea students have been receiving training at the Central Medical School in Fiji. Three have qualified as Assistant Medical Practitioners so far, and are now working in the territory.

Fifty students from the United States Trust Territory are being trained in medicine, dentistry and sanitation at the Fiji Medical School.

The use of modern health education techniques — books, pamphlets, posters, films and other visual aids — was generally applauded, but a delegate from American Samoa suggested that locally developed educational material would be more effective than anything imported from outside the region.

This was crystallized by Dr. L. Keyes, Public Health Education Adviser to the regional office of the World Health Organization, Manila, in a brief talk to the Conference on the aims of health education.

The success of visual aids was not in their use alone, he said, but in how much they changed the attitude and behaviour of the people.

The Conference affirmed the importance of the matter and urged that territorial administrations be asked to intensify that work.

The Commission was asked to suggest to them the inclusion of courses on the subject in any instruction programmes for the training of health and education personnel.

It was also recommended that the best possible use should be made of territorial broadcasting services for the purposes of health education, and that a series of simple illustrated booklets should be issued on the basic aspects of sanitation and hygiene. The series should be devised to meet the needs of a particular territory or groups of territories.

More Schools for Girls

On the subject of education the Conference recommended that particular consideration be given to the provision of more schools for girls, with facilities for domestic training, hygiene and elementary civics, and opportunities for co-educational activities.

The establishment of a central technical school was supported, and the Commission was requested to enquire into the possibility of providing more professional and technical education on a regional basis. Provision should also be made for training ships masters and marine engineers.

The desirability of attaching libraries to village and other schools was emphasized and the publication of illustrated literature on the art products of the region suggested.

Qualified academic personnel, it was urged, should be made available to preserve in written form, what remains of the traditional social organization and culture of the islanders "so that our descendants may not live in ignorance of their heritage."

Women's Conference Recommended

A conference of South Pacific women was recommended to discuss problems of special interest to them, including maternal and infant welfare, education of women and girls, women's organizations and homecraft.

Representation of women at other conferences held under the auspices of the Commission, and the possibility of publishing a woman's magazine, were also recommended.

Equality of educational opportunity was recommended to territories as one means of recognizing the necessity for full and continuous co-operation between men and women in the development of indigenous communities.

Before the Conference ended, the Deputy Chairman of the Research Council (Dr. E. M. Ojala), and the Commission's Executive Officers for Health (Dr. E. Massal), Economic Development (Dr. A. H. J. Kroon), and Social Development (Mr. H. E. Maude), briefly surveyed their work and future projects.

A delegate from each of the administrative territories — Australia, France, the Netherlands, New Zealand, the United Kingdom and the United States of America —made a brief speech expressing appreciation for the work of the Commission and its officers.

The Chairman, M. Lassalle-Sere, congratulated delegates on the success of the Conference. The solidarity of the people of the South Pacific was being forged little by little, he said. At Suva three years ago there were some hesitations and doubts about the Conference. Now they were sure of its value and that of the Commission. It was a satisfaction that the collaboration between the islanders and the Commission, shown at the Conference, would be continued after the delegations returned to their homes.

Education in American Samoa

By the Department of Education

THE indigenous people of American Samoa have lived under the control of the United States for more than fifty years. During this time, they have had contact with western culture and have evaluated what it has to contribute to life on Samoa. The policy of American Samoa is to preserve skill in their traditional arts and crafts and at the same time learn to meet on equal terms with other peoples the conditions of the modern world.

The American Samoan desires, above all else, the ability to understand and speak English. English is the language of the schools. There are no textbooks published in the Samoan language. Through the study of English, the door has been opened for an understanding of all other cultures.

The United States pattern of education is the plan accepted by the American Samoans. The elementary school consists of grades one through six. The junior high school includes grades seven through nine. Graduates of the junior high schools have the option of entering the academic high school, the vocational school or the student nurse's course. However, entrance to the academic high school is based upon academic competition.

The high school extends from the tenth grade through the thirteenth grade. Graduates of the high school may enter: (1) the teacher-training school, (2) Suva Medical School, (3) employment in the Government of American Samoa offices, or (4) higher education institutions in Hawaii or the United States.

There is almost 100% attendance in the schools of the children between the ages of seven and fifteen. Through the teacher-training school, the teachers are being better trained, thereby raising the elementary training in the schools.

Education of all the children through the elementary grades, and the advanced training of the academically superior students, is producing a continuing social advancement of the people of American Samoa.

PRINCIPAL COMMISSION PUBLICATIONS

THE documents listed below are published by the South Pacific Commission, and are available at the price of stg. 2/- per copy post free by surface mail. If required by airmail, extra postage will be charged.

Agreement Establishing the South Pacific Commission.

Proceedings of Sessions of the South Pacific Commission (First to Tenth).

Annual Report of the South Pacific Commission (1948 to 1951 inclusive).

South Pacific Commission Work Programme: Summary of Projects Approved in 1949. (Issued as Supplement to Annual Report for 1949.)

Reports of Meetings of the Research Council (Third and Fourth).

(Reports of First and Second Meetings of the Research Council appear in the Proceedings of the Third and Sixth Sessions respectively.)

Report of First South Pacific Conference.

Progress Report on Action Taken on the Resolutions of the First South Pacific Conference.

Quarterly Bulletin, ... Vol. 1, No. 1. January, 1951.
" " ..... Vol. 1, No. 2. April, 1951.
" " ..... Vol. 1, No. 3. July, 1951.
" " ..... Vol. 1, No. 4. October, 1951.
" " ..... Vol. 2, No. 1. January, 1952.
" " ..... Vol. 2, No. 2. April, 1952.
" " ..... Vol. 2, No. 3. July, 1952.
" " ..... Vol. 2, No. 4. October, 1952.
" " ..... Vol. 3, No. 1. January, 1953.
" " ..... Vol. 3, No. 2. April, 1953.

Price List

Intending subscribers should indicate their needs according to one or other of the following categories of annual subscription. All post free by surface mail.

Subscription A ..... **Quarterly Bulletin** by surface mail (see subscription blank in this issue).

Subscription B ..... **Quarterly Bulletin** by airmail.

Subscription C ..... All Commission publications, including **Quarterly Bulletin, Annual Report** and **Proceedings,** by surface mail.

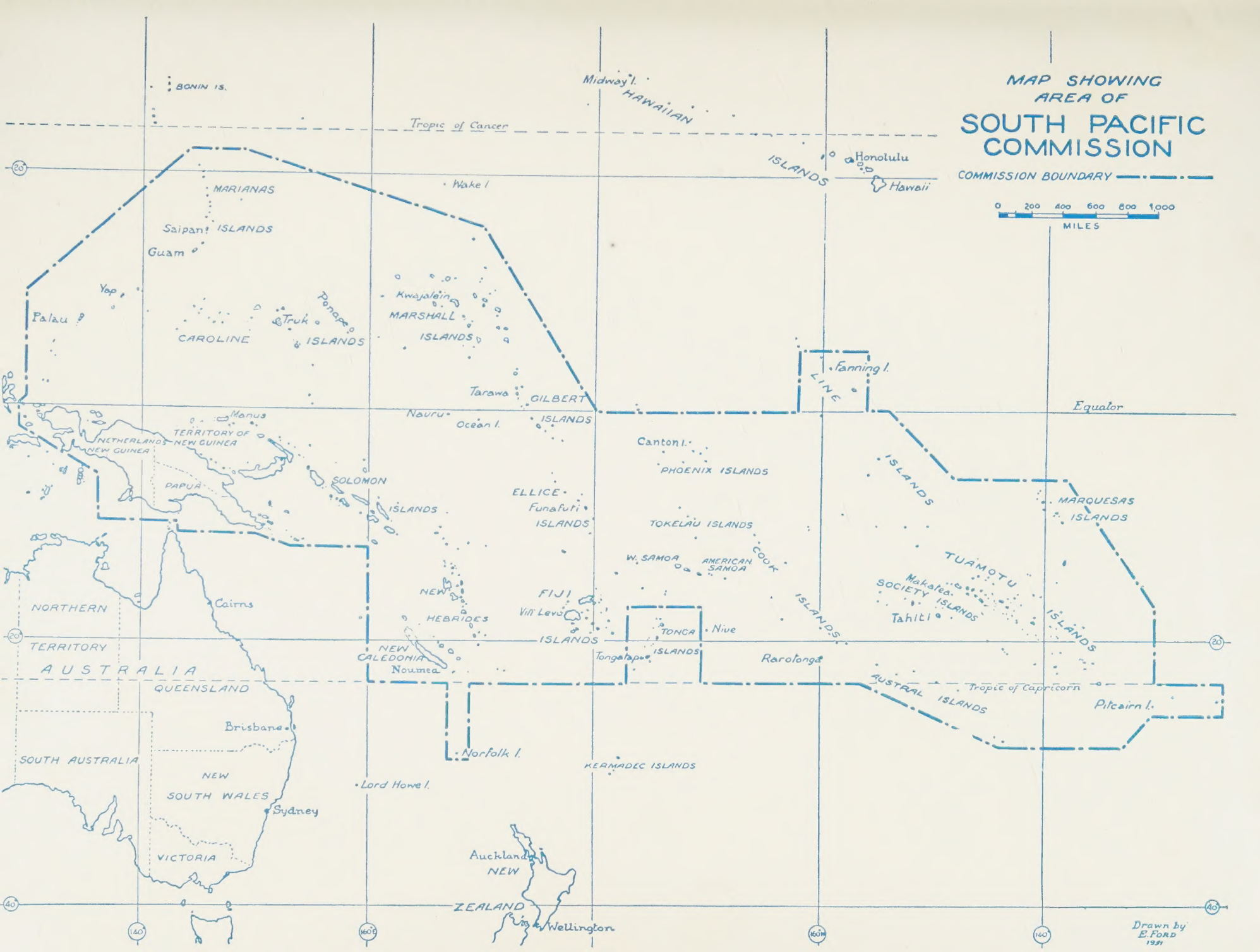
Subscription D ..... All regular Commission publications, including **Quarterly Bulletin, Annual Report** and **Proceedings,** by airmail.

Subscription E ..... **Quarterly Bulletin** airmail, all other publications by surface mail.

	£.stg. & £.N.Z.	£.Fiji	£.Aust.	Pacific Francs	U.S. Dollars
Subscription A	8/–	9/–	10/–	75	1.15
Subscription B	Supplied on application.				
Subscription C	16/–	18/–	20/–	150	2.40
Subscription D	Supplied on application.				
Subscription E	Supplied on application.				

NOTE: All Commission publications are available from the South Pacific Commission, Noumea, New Caledonia, or from the Commission's branch office at Sydney (postal address: Box 5254 G.P.O., Sydney, New South Wales, Australia).

Published by the South Pacific Commission, Noumea, New Caledonia, and printed by Bridge Printery Pty. Ltd., 117 Reservoir St., Sydney, N.S.W.


MAP SHOWING
AREA OF
SOUTH PACIFIC
COMMISSION
COMMISSION BOUNDARY
0 200 400 600 800 1,000
MILES
BONIN IS.
Midway I.
HAWAIIAN
ISLANDS
Honolulu
Hawaii
Tropic of Cancer
Wake I
MARIANAS
Saipan
ISLANDS
Guam
Yap
Palau
CAROLINE
Truk
Ponape
ISLANDS
Kwajalein
MARSHALL
ISLANDS
Fanning I.
LINE
Tarawa
GILBERT
ISLANDS
Nauru
Ocean I.
Equator
Manus
TERRITORY OF
NEW GUINEA
NETHERLANDS
NEW GUINEA
PAPUA
SOLOMON
ISLANDS
ELLICE
Funafuti
ISLANDS
Canton I.
PHOENIX ISLANDS
ISLANDS
MARQUESAS
ISLANDS
TOKELAU ISLANDS
W. SAMOA
AMERICAN
SAMOA
COOK
ISLANDS
TUAMOTU
Makatea
SOCIETY ISLANDS
Tahiti
ISLANDS
NORTHERN
TERRITORY
Cairns
NEW
HEBRIDES
FIJI
Viti Levu
TONGA
Niue
ISLANDS
Tongatapu
ISLANDS
NEW
CALEDONIA
Noumea
Rarotonga
AUSTRALIA
QUEENSLAND
Tropic of Capricorn
AUSTRAL ISLANDS
Pitcairn I.
Brisbane
Norfolk I.
SOUTH AUSTRALIA
KERMADEC ISLANDS
NEW
SOUTH WALES
Lord Howe I.
Sydney
VICTORIA
Auckland
NEW
ZEALAND
Wellington
Drawn by
E. FORD
1951

South Pacific Commission Technical Papers

THE following Technical Papers are available from the South Pacific Commission. The series includes selected project reports and papers previously given restricted distribution as Supplements to Progress Reports.

Copies of all papers listed may be procured from the South Pacific Commission, Noumea, New Caledonia, or from the South Pacific Commission, G.P.O. Box 5254, Sydney, Australia. Except where otherwise stated, price per copy is 2/- stg., post free by surface mail.

1. **The Co-operative Movement in the Gilbert and Ellice Islands.**
2. **Community Development.** March, 1950. 27 pp., bibliography. By H. E. Maude. February, 1949. 31 pp.
3. **The Village Library.** April, 1950. 9 pp., book list.
4. **Visual Aids in Education in the South Pacific.** By A. L. Moore, Visual Aids Consultant, Commonwealth Office of Education. April, 1950. 58 pp.
5. **Fisheries and Animal Health Research Projects of Significance for the South Pacific Region,** conducted under the authority of the Commonwealth Scientific and Industrial Research Organization, Australia. May, 1950. 9 pp.
6. **A Preliminary List of Economic Plants of New Caledonia.** By J. Barrau, Director of Agriculture, New Caledonia. July, 1950. 10 pp.
7. **A Preliminary List of Plants Introduced into Tahiti.** July, 1950. 21 pp.
8. **Insect Pests in the Wallis Islands and Futuna.** Extract from a report by F. Cohic, Entomologist, Institut Francais d'Oceanie. December, 1950. 30 pp.
9. **Report of Plant and Animal Quarantine Conference, Suva.** April, 1951. 24 pp., two annexures.
10. **Bibliography of Co-operation in the South Pacific.** April, 1951. 10 pp.
11. **Interim Reports on the Moturiki (Fiji) Community Development Project.** By Howard Hayden, Director of Education, Fiji. May, 1951. 48 pp.
12. **Tuberculosis Investigations by the South Pacific Commission in 1950.** May, 1951. 124 pp.
13. **Vocational Training Facilities in Australia for Students from South Pacific Territories.** May, 1951. 8 pp.
14. **Educational Broadcasts to Samoan Village Schools.** Department of Education, Western Samoa. May, 1951. 7 pp.
15. **Libraries for Beginners.** By Dr. & Mrs. Kenneth Todd, Kwato Mission, Eastern Papua. July, 1951. 21 pp.
16. **Some Notes and Suggestions Regarding Conservation of Important Archaeological Sites and Archives in South Pacific Territories.** By F. M. Keesing. August, 1951. 19 pp., bibliography. (Price 5/- stg.)
17. **Conference of Experts on Filariasis and Elephantiasis, Tahiti: Summary of Proceedings.** September, 1951. 22 pp.
18. **Report on Nutrition Investigations by the South Pacific Commission in 1950.** November, 1951. 77 pp., tables, graphs.
19. **Report on Copra Grading.** November, 1951. 20 pp.
20. **Research Workers in the South Pacific.** December, 1951. 15 pp.
21. **Note on the Mycoflora of Rice Seed in the Territories of the South Pacific.** By Dr. F. Bugnicourt, Director, Institut Francais d'Oceanie. January, 1952. 5 pp., appendices, bibliography.
22. **The Chemical Composition of the Milk of New Hebridean Mothers.** By F. E. Peters, biochemist, South Pacific Commission. February, 1952. 7 pp.
23. **Nutrition Research Conducted in New Hebrides during 1951.** By Sheila Malcolm, nutritionist, South Pacific Commission. April, 1952. 51 pp., tables, graphs.
24. **A Survey of Leprosy on the Island of Nauru.** By Dr. C. J. Austin, Director, Makogai Leprosy Hospital, Fiji. April, 1952. 8 pp., table, graph, map.
25. **Report of Fisheries Conference, Noumea.** May, 1952. 46 pp., appendices.
26. **Further Education in the Cook Islands.** By P. F. Henderson, Officer for Further Education, Cook Islands. July, 1952. 13 pp.
27. **A Survey of Leprosy in the British Solomon Islands Protectorate.** By Dr. C. J. Austin, Director, Makogai Leprosy Hospital, Fiji. July, 1952. 12 pp., map.
28. **Coral as a Building Material.** July, 1952. 10 pp., bibliography.
29. **Current Research in the South Pacific in the Field of Economic Development.** July, 1952. 82 pp., map.
30. **Bibliography of Cargo Cults and other Nativistic Movements in the South Pacific.** By Ida Leeson, former Mitchell Librarian. July, 1952. 16 pp., map.
31. **Cocoa Plantation Management in Western Samoa.** By D. R. A. Eden, General Manager, New Zealand Reparation Estates, and W. L. Edwards, Assistant General Manager. October, 1952. 20 pp., diagrams.
32. **Types of Organization in Adult and Mass Literacy Work.** By D. B. Roberts, Organizer of Island Literature, South Pacific Commission. August, 1952. 10 pp.
33. **A Survey of Malaria in the British Solomon Islands Protectorate.** By Dr. R. H. Black, School of Public Health and Tropical Medicine, University of Sydney. November, 1952. 38 pp., appendices.
34. **Rhinoceros Beetle Control in the Kingdom of Tonga.** By L. J. Dumbleton, Plant and Animal Quarantine Officer, South Pacific Commission. November, 1952. 7 pp.
35. **The Purari Delta—Background and Progress of Community Development.** November, 1952. 37 pp.
36. **Cocoa Growing in Fiji Islands.** By D. H. Urquhart, former Director of Agriculture, Gold Coast. December, 1952. 20 pp., map, appendices.
37. **Cocoa Growing in Netherlands New Guinea.** By D. H. Urquhart, former Director of Agriculture, Gold Coast. January, 1953. 14 pp., maps, appendix.
38. **Coffee Growing in New Caledonia.** By D. H. Urquhart, former Director of Agriculture, Gold Coast. January, 1953. 27 pp., maps, appendix.
39. **Cocoa Growing in Western Samoa.** By D. H. Urquhart, former Director of Agriculture, Gold Coast. January, 1953. 22 pp., maps, appendices.
40. **Cocoa Growing in New Hebrides.** By D. H. Urquhart, former Director of Agriculture, Gold Coast. January, 1953. 30 pp., appendices, map.
41. **Social Problems of Non-Maori Polynesians in New Zealand.** By Rev. R. L. Challis, Pastor of the Pacific Islanders' Congregational Church in New Zealand. February, 1953. 15 pp., bibliography.
42. **The Co-operative Movement in Papua and New Guinea.** Prepared by the Registry of Co-operative Societies, Port Moresby. February, 1953. 28 pp., sample Co-operative Society Records.
43. **Research in Queensland in Tropical Plant and Animal Industries.** By Jacques Barrau, Technical Officer, South Pacific Commission. May 1953. Maps, illustrations.